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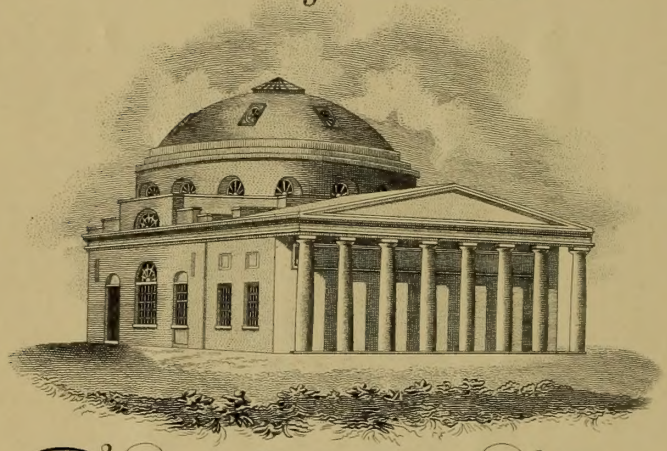

University of Maryland

Md.
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University of Maryland Theses

Early Doctor of Medicine and Doctor of Physic Dissertations with Corrected Tables of Contents

These manuscripts described as either an Inaugural Dissertation or an Inaugural Essay were presented to the University of Maryland for the Degree of Doctor of Medicine and/or Doctor of Physic during the years 1811-1837. The individual dissertations were bound together during the 1940's. The original tables of contents for the bound volumes demonstrated multiple errors in volume, number, titles, and/or years. To address these errors, an additional "Corrected Table of Contents" has been inserted at the beginning of each volume.

The project team who arranged and corrected the tables of contents were: Richard J. Dobbins, Curator and Librarian; Preservation Officer, Maria Milagros Pinkus, Metadata Management Librarian, Angela Cochrane and Carol Herlinger-Henry, Resources Division; Sarah Hovde, Alan Schorr and Megan Wolff, Services Division.

These dissertations were digitized in 2013-2015 and are available in the UM Digital Archive (archive.lib.umaryland.edu) and the Internet Archive (www.archive.org).

University of Maryland Theses

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The project team who investigated and corrected the tables of contents were Richard J. Behles, Historical Librarian/Preservation Officer; María Milagros Pinkas, Metadata Management Librarian; Angela Cochrane and Carol Harling-Henry, Resources Division; Sarah Hovde, Abra Schnur and Megan Wolff, Services Division.

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Farrow, William H.	Phlegmasia Alba Dolens Puerperarum	1832
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UNIVERSITY OF MARYLAND

THESES

1831-1832

Robinson, Lake	Intermittent Fever	~~48p.~~ 49p.
Martin ~~Marlin,~~ Henry N.	Nature and Treatment of Gun Shot Wounds	21p.
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Williams, Presley N.	Cause of Fever	19p.
Leonard, William ~~Wm.~~ T.	Phlegmasia Dolens	24p.
Hawkins, Alexander S.	Malaria	45p.
Bowie, Richard W. ~~R. W.~~	Congestive Bilious Fever	13p.
Maddox, James T. N.	Delirium Tremens	26p.
Higgins, Samuel	Sur La Fievre	24p.
Skinner, Henry	Cynanche Trachealis	15p.
Farrow, William ~~Wm.~~ H.	Phlegmasia Alba Dolens Puerperarum	18p.
McPhail, Leonard Cassell	Variola	33p.
Hall, Roberto C.	De Hepatitide	18p.
Newcomb, George	Aneurism	21p. 1831 (yes)

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An Inaugural Dissertation on Intermittent Fever,

Submitted to the examination of the Provost, Trustees and Medical Faculty of the University of Maryland. On the 10th day of March 1832. For the degree of Doctor of Medicine.

By Lake Robinson of Cambridge Maryland

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To the

Revd Joseph S. Tomlinson A.M.

Professor of

Mathematics and Natural Philosophy

in

Augusta College.

The devoted minister and profound scholar.

This dissertation

is

respectfully inscribed,

as a

Small testimonial of respect and esteem

by

his sincere friend and former pupil

The Author

Several considerations have induced me to make choice of Intermittent Fever as the subject of my inaugural dissertation. Having been raised in a part of our state where this disease exists in very great abundance; I have consequently had an opportunity of seeing it in its various forms: even from boy-hood have I been familiar with its most common symptoms, and the usual domestic plan of treatment pursued for its cure. Since the science of medicine has more especially occupied my attention, I have made many observations on this disease, which confirm the principles contained in the following pages, and enable me with greater confidence, to submit them to the scrutiny of the Faculty. Forcible as the above considerations are; there is another, upon which I would even lay greater emphasis. Having year after year painfully witnessed the extensive ravages committed on society by the class of diseases called bilious, and the distressing consequences thereby resulting; an ardent desire was excited to become well acquainted with them. I have therefore in the following pages entered into a minute investigation of miasma — that mischeivous principle upon which the class of bilious diseases depends — its nature, production, and modus agendi in the causation of fever; hoping thereby to discover some facts which would enable me to institute a more

successful practice. In indulging myself in these investigations, I have trespassed very much on my limits, and foreign from my intention, drawn out my thesis to an inordinate length.

Hoping however that the Gentlemen of the Faculty will view my enthusiastic desire to become conversant with these subjects as an apology for its unusual extent; I respectfully submit it to their investigation.

Intermittent fever is an idiopathic fever, consisting of distinct paroxysms, with determined intervals, of variable duration according to the type. The paroxysm commencing with a chill which is followed by increased heat, and terminating by profuse perspiration. The intermission being without fever, and the functions almost entirely restored to their healthy action.

This disease, as Dr. Barnwell* has suggested appears to be the connecting link, between febrile and spasmodic diseases. Febrile - because a single paroxysm exhibits all the phenomena of a fever. Spasmodic from its recurring periodically. Although this disease is so common in warm climates, and has been so frequently treated of by medical writers; it is notwithstanding not the least obscure, and best understood of the extensive variety of affections to which the human system is subject. To establish this assertion, we have only to look around us - in our own immediate neighbourhood - even in this our salubrious climate, and behold the grave-like beings exhibited to our view. On the one hand we see a sallow, feeble, dejected looking mortal, dragging out a tiresome existence, which it appears the God-like science of

* Barnwell's Physical Investigations

of medicine is frequently unable to render more satisfactory every 24, 48 or 72 hours, now quaking as if Terror were in person at the bedside, now burning as if a fiery furnace were about him, now a maniac weltering in sweat and helpless as infancy; or on the other hand labouring under some long continued disorder of the spleen, liver &c, which renders life a burden almost too intolerable to be borne

Upon this retrospect, who is not sensible that much is yet to be accomplished in order perfectly to alleviate the miseries inflicted upon mankind by this most afflicting of diseases? I feel a consciousness that not to me is intrusted the magnanimous work of paving ~~the~~ ~~[illegible]~~ the immortal way to perfect success in the pathology and treatment of this disease. But being disposed to lend a helping hand ~~a helping hand~~, feeble as it is, in this most arduous task; I most respectfully and with due deference submit the following Obervations.

Primary Types

From a very early date, there have been observed in Intermittent Fever, three primary types; which we will arrange according to the frequency of their occurrence guided by our own experience viz. Into TERTIAN,

QUOTIDIAN and QUARTAN, in which the paroxysms pass through all their phenomena after the respective intervals of 48, 24 & 72 hours. The interval is that space of time between the beginning of one paroxysm and the commencement of the following. The intermission is the space of time between the termination of one paroxysm and the accession of the following. Each of the above types, however, is subject to very great variations; for instead of the paroxysm invading after the regular interval; it is very common for it to anticipate or delay the usual period of return; and after the commencement of a paroxysm its duration is very variable even in an ague of the same type. Besides the common types of quotidian, tertian and quartan, observed by all writers on this subject, an almost endless number of irregular and anomalous kinds have been enumerated by authors, which it would be vain for us to attempt to notice, within our contracted compass; also the numerous and intricate complications of this with other diseases will receive but a very small share of our attention as we pass along. Because we conceive, that when once we understand, and can properly manage the three primary types of Intermittents; and are well acquainted with the diseases

with which they are most commonly complicated; we shall be perfectly able to treat with success all the irregular anomalous and complicated cases.

The Tertian Type

Tertian ague has an interval of about 48 hours; it generally invades in the forenoon, very near the middle of the day, and the paroxysm continues about six, eight or ten hours, very rarely amounting to or above twelve hours. From what our limited experience has taught us, we are satisfied that the tertian form of Intermittent is of the most frequent occurrence; it generally makes its appearance during the spring and summer months, "though there is a spurious kind" says Dr. Good "that shows itself in autumn, and when it does occur in autumn the paroxysm is very apt to exceed twelve hours.

Vernal agues are of an inflammatory nature, generally ~~disappear~~ mild and usually disappear with the advance of summer. "The chill, during the cold fit, is intense, with convulsive shivering, rigidity, and gnashing of the teeth. It is however, of shorter duration than that of the quartan, and sometimes passes off in less than half an hour; and is succeeded first by nausea or vomiting; and afterwards by a pungent penetrating heat,

frequent respiration, urgent desire for cold drink wakefulness, and headache, sometimes delirium. At length a moisture on the skin, gradually advancing to a copious sweat, breaks forth, the urine commonly deposits a lateritious sediment, and there is often some looseness of the bowels."* Tertians, however, differ with respect to their symptoms; they frequently come on with coma or other symptoms of apoplexy. There are sometimes convulsions, and efflorescences on the skin particularly in children; the blotches generally disappear with the fever. We find also diseases, indicating a very serious affection of the liver, as cholera and dysentery, more frequently accompanying tertian Intermittents. Persons of riper years, strong constitution, and particularly of bilious diathesis are more subject to tertian agues. There are several varieties of tertians, and they frequently change into one of another type.

The Quotidian Type

Quotidian ague has an interval of about 24 hours; it, almost invariably, comes on about the beginning of the day; and the paroxysm continues about twelve or fifteen

* Good's Study of Medicine Vol. 2. page 70. Boston 1823

hours. The quotidian type appears to be more common with us than the quartan, and I am not aware that it has an attraction for one particular season more than another in which Intermittents generally occur. Probably it is most frequent in spring. It has the slightest cold stage, although the longest paroxysm. We think it less dangerous than either of the other types, if we view it independent of its many and intricate complications; because as Professor Potter says "The cold stage being shorter the reaction is greater" and the greater the reaction, the greater effect will it have in removing the congestion of the portal circle, with which (congestion) Intermittent Fever is so intimately connected. Quotidian ague very frequently affects only a particular part of the body, producing a quotidian headache, a periodical pain of the eyes, ears, jaws, & sometimes a rheumatic affection of the back and hip, without as we should expect, any increased frequency of the pulse. Children and persons of delicate habit are more subject to Intermittents of the quotidian type. Quotidian agues are very apt to assume the continued form of fevers. The diagnosis is sometimes difficult between a double-tertian and a quotidian ague; but by close attention to the first two or three paroxysms we shall be able to distinguish; we shall find the alternate paroxysms of a double-tertian alike and

much more severe than the one between them; the paroxysms in a quotidian are all alike and equally severe

The Quartan Type

Quartan ague has an interval of about 72 hours; it usually invades in the afternoon; and the paroxysm continues about five, six, or eight hours. The quartan is undoubtedly the most rare of the three primary types in this climate. It appears to be peculiar to the autumnal and winter seasons, scarcely ever appearing in the spring of the year. It is considered the most obstinate of all Intermittents, especially if it commence late in the fall, or in the beginning of winter, and is by far the most apt to be followed by visceral obstructions. From the debility which prevails, and the difficulty of increasing excitement in autumnal agues, we readily infer the greater danger of this species. "The cold fit is less vehement than in the tertian, but of longer duration, and will sometimes continue for two hours, but usually with sickness or diarrhoa. It yields to a heat that is rather troublesome from its dryness than from its intensity, and which is rarely succeeded by a sensible perspiration. There is a heaviness or dulness in the head rather than acute pain; and often during the intermediate days, a sense of soreness over the

body, as though it had been generally bruised, which strikes through the bones."* Dr. Grant (quoted by W. Philip) says "he has seen the cold fit of the quartan last fifteen hours". This form of Intermittent fever, as we have hinted above, is most frequently followed by chronic affections of the liver and spleen; the enlargement of the latter constituting what is vulgarly called fever cake. Those of advanced age, sedentary habit and melancholic temperament are most subject to Intermittents of the quartan type. There are several varieties of quartan agues, which we of necessity exclude for reasons already assigned.

Symptoms

Although we have before, when treating of the different types of Intermittents, enumerated many of the symptoms peculiar to each type; yet we think it proper for the sake of perspicuity, to present at one view, briefly and concisely all the symptoms accompanying a single paroxysm of Intermittent Fever; and in order that our object may be the better accomplished, we propose to divide the symptoms, as almost all authors on this subject have done, into those of the COLD HOT and SWEATING stages.

* Good's Study of Medicine vol. 2. Page 71. Boston 1823

Symptoms of the cold stage

The paroxysm generally comes on very suddenly. There is commonly on the approach of the fit a sense of debility, languor, lassitude, attended with yawning and stretching, an uneasy wearinesſ and entire indisposition to motion; there is pain in the loins and limbs. The patient goes almost involuntarily towards the fire if there be any present, and places himself in that posture which requires the least muscular action, but he soon becomes tired of his situation, yet from the reluctance to move he halts between two opinions, whether to alter his position or remain stationary. The extremities, although the patient does not complain of cold, feel cold to another person; the pulse being small weak and frequent is hardly perceptible; the face now becomes pale and the features shrunk; there is great uneasineſs in the stomach and frequently an inclination to vomit; the nails, lips & skin now assume a marbled appearance, or a paleneſs interspersed with light purplish spots, the skin is rough dry and shrivelled, having that peculiar appearance, remark^d by many, of the skin of an unfeathered goose, named technically cutis anserina. The first sensation of cold is generally referred to the back, which gradually spreads over the whole body. The sense of cold increasing a

a violent trembling takes place, commonly beginning in the lower jaw, then in the lower limbs, and from them ascending to the arms. Sometimes the shaking is so severe that at the termination of the cold stage, the muscular debility is such that the patient can scarcely move his limbs; not unfrequently in persons much debilitated syncope takes place. The breathing is anxious and oppressed, interrupted by sighing, and frequently attended with a sense of tightness across the thorax. The kidneys seem also to partake of the general derangement, for the urine secreted is of a clear pale colour.

The above may be considered all the usual phenomena of the cold stage of Intermittent Fever; but there are deviations from the regular course, and modifications of some of the symptoms, which probably deserve a brief notice. In some cases the sensation of cold is confined to a part of the body, the rest feeling comfortably warm. In the progress of the cold stage, when the patient begins to feel cold, it is sometimes observed that the skin feels warm to another person. Coma is a frequent attendant upon the cold stage, sometimes coming on early in the paroxysm. Ulcers have been observed to dry up and tumours to subside, but these effects are only temporary. Sometimes

though rarely many of the most prominent of the aforementioned symptoms are absent, so that it is difficult to decide whether there is any cold stage. The duration of this stage is noticed when speaking of each type separately. Professor Potter says that "when the remote cause inflicts a deep wound upon the nervous system, the patient sometimes dies in the chill, sometimes in the first though more frequently in the second or third paroxysm."

Symptoms of the hot & sweating stages

Gradually the feeling of chilliness passes off alternating with warm flushings. At length the warm stage is perfectly formed; there is an increase of heat diffused over the whole body, frequently attended with nausea and vomiting; the paleness of the skin is followed by general redness, and the shrinking is succeeded, even by a preternatural turgescence and fulness; the skin is dry and hot; there is great thirst, violent head-ache restlessness and hurried breathing; the tongue is furred, the pulse strong, full & frequent; the urine is scanty and high coloured and in severe cases there is delirium.

Frequently the patient will complain of pain in his bowels. It is by no means unusual for hæmorrhages to occur in this stage from different parts of the body; unless they are profuse

and the patient is very much debilitated, they are not to be regarded as dangerous. Hæmorhage from the nose is generally attended with considerable relief.

When the above symptoms viz. heat, redness, head-ache &c. have continued for some time, the third and last stage is ushered in. A moisture first appears on the forehead, soon followed by a profuse sweat, over the face and breast which by degrees is diffused over the body and extremities; the fever rapidly subsides; the heat, thirst and head-ache cease; the pulse becomes natural; the breathing easy; the urine deposits a lateritious sediment, and all the functions are restored to their usual state; the appetite returns but there is considerable weakness and weariness.

Prognosis

Doct. Gregory has very justly remarked that "No general prognosis in Intermittent Fever can be given, which is not qualified by reference to the climate in which the disease appears. In this country and in Holland ague is not a disease of danger; but at Sierra Leone, and along the neighbouring coast, it is scarcely exceeded in malignity by any known disorder." * It is also materially affected by season and the previous dura-

* Gregory's Practice Vol. 1. Page 115 Phila. 1826

tion of the disease; autumnal agues are more dangerous; there is also a quartan Intermittent which occurs in winter said by Professor Potter in a note to Gregory's Practice* to be "difficult to treat." When the duration of Intermittents is of long continuance, they are apt to fix themselves in the constitution, and induce very troublesome affections of the viscera, which require all the skill of the physician to remove, and even sometimes resist all his endeavours and end fatally. Coma, delirium, Subsultus tendinum, are very unfavourable, especially if they occur early in the disease; impaired or false vision is unfavourable, while deafness is considered ~~un~~favourable; great anxiety and palpitation of the heart are unfavourable; a frequent weak and irregular pulse, generally precedes death; the respiration, as death approaches, is anxious, having sometimes intermissions of considerable duration, inducing those around to think that the vital spark is really extinct; when these remarkable intermissions in the ~~pulse~~ respiration do accur, they are apt to be accompanied with a violent affection of the head; sighing, groaning and hiccough are very unfavourable; when the cheeks and nostrils are contracted and expanded by every breath, great danger is denoted.

* Volume 1st. Page 114 Phild. 1826

In the natural functions, debility of the stomach nausea and vomiting, an involuntary discharge of the excretions from palsy of the sphincters, and difficulty of deglutition are very unfavourable; a colliquative diarrhœa, the stools being dark and fœtid, often precedes death; black vomit, cadaverous perspiration; and dark urine are unfavourable, as they indicate general hæmorrhage.

The more the disease approaches to the continued form the greater the danger. Anorexia and great debility on the days of intermission are very unfavourable.

The favourable prognosis is evident when we consider the unfavourable. The paroxysm being moderate, the patient young and temperate, appetite good and strength not much impaired, during the apyrexia; and the disease recent and unaccompanied with any induration or enlargement of the viscera, are the most favourable signs. We are authorized to assert, that Intermittent Fever in our climate, is not a disease of danger; though frequently obstinate, if timely medical aid be afforded, it can always be controlled. This cannot be said of the disease in sultry climates, where the prognosis is almost always unfavourable.

Death may take place in any of the stages of the paroxysm; the patient may even expire in the intermission from the great violence of the preceeding paroxysm. The comparative danger of the different types of Intermittents, we have already spoken of under the head of each type seperately.

Causes of Intermittents

A knowledge of the causes of diseases, and the action of those causes, is a consummation in medicine greatly to be desired. Upon such a knowledge only can a rational and successful practice be predicated, or can we theorise upon the effects of remediate agents. To know the cause of a disease, is at once to know the means by which we may escape its ravages. If, for instance, we know that the effluvium, proceeding from the lungs or skin of a person labouring under small-pox, measles, whooping-cough &c. would by placing ourselves within the sphere of its action, certainly act as a cause in producing the same identical disease in ourselves; we have only to observe the necessary caution of keeping ourselves at a distance from such diseased person and thereby avoid it. Again, if we know that at a certain season

of the year, in particular districts of country, the condition of the atmosphere then and there is such that by its action on the system, certain diseases will in all probability be produced; we have only to absent ourselves from such districts at such seasons, and thus by avoiding the cause to a certainty avoid the diseases.

But although we may arrive at a demonstrative knowledge of the causes of all the long catalogue of diseases, still a great many will of imperious necessity be exposed to those causes which diffuse themselves through a great extent of atmosphere; whilst many others will accidentally be brought within the sphere of contagious effluvia, and have the diseases excited which depend upon these causes. We therefore perceive plainly that the causes of diseases, must and always will continue to exert their baneful influence upon the human system. And as this is the case, we repeat, that a knowledge of the modus agendi of the causes is to the medical practitioner of infinite value; for upon it are founded all our principles of treatment and without it all our remediate agents can only be administered empirically

In the investigation of this part of our subject, we intend to divide the causes into remote and exciting; the former rendering the body liable to the disease, may exist a considerable time previous to the attack and even may exist without the disease ever being roused into action; the latter cooperates with the former, and immediately precedes the attack.

Remote Cause

As it regards the remote cause of Intermittent Fever, we are borne out by almost every individual author on this subject in asserting that it is always one and the same, and that it arises generally from low marshy situations, stagnant pools &c. under circumstances favourable to the decomposition of vegetable matter.

We are aware that some are opposed to this unity in the remote cause, and advocate by most forcible arguments, drawn from actual observation, the agency of animal putrefaction alone in producing the disease. They have recited instances in which the disease has raged, where no other cause could be ascertained but that arising from the putrefaction of animal matter. Be this as it may, we shall leave it as we

have found it, and proceed to the investigation of that principle which is universally admitted to be materially concerned in producing Intermittent Fever and which has received the term of MARSH MIASMA or MALARIA

Nature of Miasma

What this subtle principle, this noxious agent, this fell angel of destruction, with which our atmosphere is infested, is, the ingenuity and research of medical philosophers, have never yet been able satisfactorily to determine; and it may be said yet to stand as one of the opprobria of medical science. No eudiometrical experiments, however delicate, or with whatever skill performed, have (that we know) hitherto detected the subtle poison, or shown its presence, even where sad experience had demonstrated its existence. Various have been the conjectures respecting its supposed basis. Dr. Cartwright,* in theorizing upon this subject, has established a very material diagnosis between effluvia and miasmata, although they have too generally been confounded, and made use of by medical men as one and the same. He says that effluvia are nothing more than parts of the decomposed bodies themselves. They are innoxious as the bodies of

* Medical Recorder Vol. 10. Page 227

which they formed part. Facts prove them to be so. Nature still farther analyses these effluvia; and seperates them into the atoms of which they are composed". He then goes on to state that these atoms, under ordinary circumstances, enter into harmless combinations, but under peculiar circumstances of atmospheric temperature moisture, &c. they enter into combinations different from those of ordinary circumstances, and the product of this synthetical process is malaria or miasmata. The unknown process by which miasma is generated, he has called malarious assimilation. It appears to be the whole object of the author above quoted, to show that it is not merely the decomposition of matter, but the combinations which may take place, under peculiar circumstances, from the matter decomposed that produce disease; that the malarious assimilation, acting under different circumstances, produces different kinds of malaria or miasmata; and that these different miasms thus formed produce different diseases. For example. The malarious assimilation "taking place in the vicinity of a marsh, the effluvia, thrown off from the marsh, have the atoms into which they are seperated, combined anew by it - producing those miasmata that give rise to bilious fevers" In the same essay he

attempts to prove that cholera infantum & yellow fever are each of them caused by a distinct miasm, depending for its properties upon the peculiar circumstances of its generation. Dr. Cartwright's theory is very ingenious, and probably as good as any that has been offered.

The opinion has been entertained by many that miasma is a vapour held in solution in the atmosphere, which is directly opposed to the opinion of Dr. Cartwright above recited. A vapour is a solid or liquid substance, converted into an elastic fluid by the agency of caloric, and is nothing more nor less than the minutest atoms of that solid or liquid removed beyond the laws of cohesive attraction. Dr. Cartwright says "these atoms are innoxious as the bodies of which they formed part." The advocates of this doctrine of vapours say they are the agents in producing the disease. Says Wilson Philip* "We know that it (miasma) is the effluvia, together with the moisture perhaps of marshy grounds; and this is all we know of it." An unknown author in the Medical Recorder Vol. 8. Page 494 says "as science discovers no gas to which these febrific effects are to be attributed, the vapours dissolved in the air must then be the media by which the putrifying par-

* Wilson Philip on Fevers Vol. 1. Page 82 Hartford 1816

ticles render the air noxious". Many circumstances have been adduced in favour of this opinion; winds from a dry region have been ~~supposed~~ said to suspend the disease; whilst those of a moist kind have increased it. De Lisle* has concluded from his experiments, that miasmata are particles of putrid effluvia suspended by aqueous vapours in the atmosphere. Dr Eberle says "there is reason to beleive that they (miasmata) consist of particles of putrid animal and vegetable matter, dissolved in aqueous vapour. Chemical analysis can detect no difference between the air of marshes and atmospheric air. Gaspard's experiments on putrid matters received into the body, support the opinion that marsh miasmata consist of putrid vegetable and animal matter suspended in the air". +

Some have argued that the deleterious effects of a miasmatic atmosphere depend upon a superabundance of oxygen; other with surely a greater degree of plausibility say they depend upon an overcharge of carbonic acid gas and hydrogen. "Galloni repeatedly examined the stagnant air of the marshes at the mouth of the Valteline, & found it to contain two parts more of oxygen than that of the summit of mount Legnone, 8640 feet above the level

* Chapman's Journal Vol. 8. Page 364. + Eberle's Lectures Page 12.

of the sea"* "Dessaussure has ~~the air of~~ also ascertained that the air of mountains contains less oxygen than that of plains" The following quotation from Causin on the autumnal bilious epidemic of the United States† are in favour of an excess of carbonic acid gas and hydrogen. He says "for other chemical tests by affinity have frequently detected the existence of carbonic acid gas, hydrogen &c. in considerable quantities in the atmosphere of marshes. The exposure of lime-water to its action, has resulted in the deposition of the carbonate of lime; this fact is of itself a host, opposed to the numerous negations adduced by the advocates of eudiometrical experiments" Professor De Butts suggested the idea in his lectures, that some modification of carburetted hydrogen gas, may be the gas that produces miasmatic diseases. Others have called it Phosphuretted hydrogen, Sulphuretted hydrogen, Nitrous Oxide gas &c To conclude we cannot but remark the mystery in which the subject seems to be enveloped, when we view the various and opposite conclusions to which different men, of equal intelligence, have arrived, by whom it has been investigated.

* Alibert Page 213 † Medical Recorder Vol. 7 Page 62.

Circumstances which favour the production of miasma

The existence of marsh miasma must have been from time immemorial - coeval with the first decomposition of vegetable matter. Lancisi of Rome in the seventeenth century in his treatise "De Noxiis Paludum Effluviis" was the first who distinguished himself in its investigation. Since his time many learned essays, have been written on the same subject; in which the authors have manifested great erudition and untiring perseverance. From all that we can learn, we conclude, that heat, moisture, and the remains of living vegetables, existing together in certain proportions; together with a certain peculiarity of soil, are the necessary agents in its production.

Without a sufficient degree of heat, putrefaction cannot go on. Diseases, therefore depending upon miasma as their remote cause, are confined to warm climates and warm seasons. The cold winds, blowing from the North during their prevalence, render them milder; and as soon as frost appears in Autumn, they are almost entirely banished, owing to the cold which they produce being unfavourable to the decomposition of vegetable matter. In our own Continent Intermitting Fevers are

milder in the higher latitudes of Canada and New England; and in proportion as we advance toward the south, in the same proportion do these diseases increase in malignity; so that in the West Indies they are among the most terrible of their endemics.

Moisture also acts a very material part in the process of the decomposition of vegetable remains, but it must be in due quantity. A deficiency is unfavourable. As in some parts of Africa under the burning rays of a tropical sun it is healthy during the dry season; and the dry hot winds coming from the desert put a stop to the ravages of the plague. Draining marshes perfectly dry have checked bilious diseases in their vicinity. An excess of moisture is equally unfavourable to the putrefactive process. Miasma is not generated in marshes which are completely inundated; and its production has been suspended by overflowing portions of country where it was evolved. Egypt, during the inundation of the country by the overflowing of the Nile, is but little affected with Intermittents; but as soon as the waters retire within the banks of the river then they prevail. It is only when the bottoms of ponds swamps and all other places, which in wet seasons

are covered with water, are exposed, that putrefaction goes on in its greatest degree.

As to the peculiarity of soil, we are acquainted with but few facts respecting it. Alluvial deposits, rich spongy soils, and those which permit water to percolate easily through their superior strata, while their sub-strata are hard and compacted, are those which are most likely to favour the production of miasma.

Miasmata are susceptible of being conveyed to a considerable distance by atmospheric transition. Dr. Caldwell thinks they cannot produce fever more than half a mile from the place where they are generated. A writer in the Medical Recorder vol. 8th Page 490 says "Miasmata are borne for many miles: thus Lancisi mentions, that the winds blowing over low grounds near Rome caused the fever in twenty nine out of thirty persons on a party of pleasure." * Senac mentions a village, in which the prevalence of particular winds blowing over marshes, produced obstinate fevers in those who had not them before, and relapses in those who had. + Lind states that the East wind, blowing over marshes, was the cause of fevers in Great Britain

* Alibert + Ibid Page 175

in 1765-6; it produced a chilliness, like that from going into a chamber newly wet.* Accordingly, the distance at which these poisons produce their effects has been found to vary from a few feet to eight or ten miles." "Whenever the winds have free access to those places where miasma is produced they render the noxious poison much less injurious by dilution. Whereas on the other hand a calm state of the air, by permitting a concentration of the miasma, increases its effects in the causation of disease.

Modus agendi of miasma

When we respire atmospheric air charged with miasma, it comes in contact with the mucous membrane of the lungs - a membrane, supposed by some, to be many times greater in extent than the whole surface of the body, at the rate of twenty times in a minute. This membrane is interwoven with numerous nervous filaments, which are derived from the Pneumo-gastric nerve, and the cervical and thoracic ganglia of the great Sympathetic system. The noxious miasm having been inspired, and brought in contact with this extensive bronchial membrane; the question now is, how does it act upon the system to produce fever? This is an interrogation, to answer which we -

acknowledge our inability; and in this we are not alone, for so far as our reading has extended, we have not seen a single author, even attempt, minutely and definitely to explain the whole process of morbid action, going on in the system, from the time the malaria is inspired until a paroxysm of fever in induced. We have heard indeed from many sources, that it acts on the brain and nervous system, and that the effect of its action is debility or a diminution of their energy. But this is very indefinite, and as our subject would be very incomplete without some thoughts on the modus operandi of miasma, we are urged reluctantly to make the inquiry whether it may not be explained in the following ways either individually or conjointly; independent of any change in the chemical constituents of the atmosphere to account for the phenomena —

(First.) The miasma, by impinging upon the nerves spread out upon the extensive macous membrane of the lungs, may exert a deleterious influence, by directly diminishing the excitement of the Pneumo-gastric plexus, which reduced energy may, by sympathy, be communicated to the Sensorium commuend- the centre of nervous influence and induce a partial atony in that organ; its powers

being depressed, the nerves, connected with it and ramifying upon and among all the organs, necessarily partake of its derangements, and are thereby rendered unfit for exciting in their due degree the organs to which they are distributed; consequently there is a sluggishness in all the movements of the economy; the heart, arteries and veins, undergo an impairment of their power in circulating the blood; the surface and extremities—parts remote from the heart, are not furnished with their wonted supply of the vital fluid; it collects upon the great vessels in the central parts of the body congestion takes place, and for want of action on the surface a chill is the ultimate consequence?

(Secondly) Miasma, by its action upon the nerves of the lungs, producing a diminution of their energy, may impair the influence which they are acknowledged to exert, in the transformation of venous into arterial blood; the blood will be returned, through the pulmonary veins to the heart in a state of imperfect arterialization; it does not afford its accustomed stimulus to the walls of its cavities; its contractions are thereby rendered less vigorous, and in this way the same state of the circulation is brought on as in the first inquiry, and the

chill comes on. But to this debility in the action of the heart and the whole sanguiferous system, produced by the contact of imperfectly arterialized blood, may be added that, which is caused by the interruption of the action of the brain and whole nervous system, from the deliterious influence, which blood in that state is known to exert upon them.?

(Thirdly) M. Magendie* says. "The pulmonary veins absorb the same as other veins and transport to the heart the substances which are in contact with the spongeous tissue of the lobules of the lungs. One inspiration of air charged with odorous particles is sufficient for its effects to become manifest in the animal economy" Now miasma by being inhaled into the lungs, may first exert its debilitating influence upon the nerves distributed to the bronchial membrane; and then be absorbed by the bloodvessels ramifying upon that membrane, carried into the circulating mass of blood, and by being diffused through every part of the whole system, brought into immediate contact with the brain and nerves, and thus by its presence produce that debility which is observed in Intermittents; the same state of the circulation is thereby induced as in

* Physiology Page 356 Phila. 1824

the former inquiries and a paroxysm of fever is excited.?

We perceive therefore, that according to the first inquiry; miasma acts primarily on the nerves of the lungs; secondarily, by sympathy, upon the brain; and lastly through the nerves upon the organs of the whole system.

According to the second inquiry, the cause acts primarily on the nerves of the lungs; secondarily through them on the mass of blood; and finally through the medium of the circulation, upon the whole nervous system.

According to the third inquiry, the cause acts primarily on the nerves of the lungs; and ultimately, by being absorbed into the blood, upon the whole nervous system through the medium of the circulation.

Those who advocate the doctrine of the oxygenation of the blood in respiration, attempt to account for the action of miasma by supposing that the blood is imperfectly oxygenated, from the deficiency of oxygen in an atmosphere charged with miasma. Others, supporting the doctrine of the decarbonation of the blood in respiration, charge all the baneful effects of miasma to an imperfect decarbonation of the blood, on account of a superabundance of carbonic acid gas in a miasmatic atmosphere. That the blood taken from the vein of a patient labouring under

Intermittent Fever, is darker than the blood drawn in health is a fact which experience has pretty well established; and which is a very strong argument in favour of the imperfect arterialization of the blood.

Having inquired into the immediate cause of the chill and the phenomena attendant upon it. We are now to inquire into the cause of the reaction.

It seems to be a general law through every part of the animal economy, that every hollow organ is stimulated to contract by the particular fluid which it naturally contains; and that in proportion to the distension or resistence, will it be excited to more powerful contractions. The heart, in the cold stage of Intermittent Fever, and the large arteries in its immediate neighbourhood, being oppressed with a great quantity of blood and their excitability being greatly accumulated, are stimulated to increased efforts to relieve themselves; which they will do, if by the action of the remote cause they be not over-much exhausted of their energy, in which case they are overcome by the conflict, reaction never takes place and death ensues in the cold stage. "But if the strength of the heart is sufficient to overcome the resistence in this conflict, the heat and feverishness ensue, until a

balance is again brought about between the several functions, &c. and then there is an interval of health of uncertain duration."*

Exciting causes of Intermittents

They have been detailed with great minuteness by many authors, but we shall only notice some of the most important. Exposure to the night air and heavy dews, is of all the exciting causes, the best calculated to promote the action of miasma. Exposure to the rays of the sun, to wet and cold; any cause which has a tendency to weaken the body, as crude acrid and indigestible food, especially unripe fruit, long watching; excessive heat; excessive fatigue; intemperance in the use of ardent spirits and sleeping in damp clothes, are all very active agents in exciting the disease. Certain states of the mind are said to favour the production of ague; as sorrow, fear, grief, anger and great anxiety. Also whatever tends to derange the first passages, as the habitual use of heating and irritating medicines excite the disease. The sudden suppression, of any habitual discharge, is said to have the same effect.

* Barnwell's Physical Investigations Page 305 Phila 1802

Treatment

In the treatment of Intermittent Fever, medical skill was considered by many as not required, looking upon the disease as one not worthy the attention of scientific physicians, and as only a fit malady for the nostrums of the empiric. These views were entertained by those who considered it as of minor importance in the catalogue of diseases. But there was another description of persons, who appeared to be aware of the superior rank which this holds among diseases, and the dangerous consequences induced by it in the human system; and who still believed that physicians were unable to cure it, and placed less fidelity in them than the incantations of the superstitious. People in this our day are more enlightened. With the ignorance of former generations, have passed away many of their views of this disease; and the increasing intelligence of the medical profession has had a very powerful tendency, to strip the minds of the people of many of their prejudices. So that at the present day we find the physician as frequently consulted for this as any other disease, and unhesitating confidence placed in his skill to cure it.

The treatment resolves itself very naturally into that during the paroxysm or palliative; and that during the

intermission or curative.

Treatment during the paroxysm

During the paroxysm the indication of cure is to hasten the termination of the stage present, and to bring the stage which naturally follows; and releive all urgent symptoms until the apyrexia is induced. Our object, therefore when the cold stage is present, is to bring on the hot; and when the hot is induced, to terminate it as speedily as possible by promoting free diaphoresis.

Means used in the cold fit

The patient urged by his feelings will generally use many of the means necessary in the cold fit. He should retire to bed and be kept warm, and as the blood has receeded from the surface and extremities, and collected in the large vessels about the heart; our object is to releive the internal organs and solicit the vital fluid to the surface. To accomplish this we apply bottles of hot water to the feet and loins, and warm fomentations to the epigastrium.

The patient must use warm acidulated drinks, as warm lemonade, apple-water, barley water sweetened and acidulated with vinegar or Elix. of vitriol. Exhibited in the very commencement of the chill, we have known the most

decided good effects to be produced by a large dose of Tincture of Opium: the spirits become exhilerated, a gentle moisture appears on the skin and the violence of the ague and whole paroxysm is greatly diminished.

Various are the opinions of physicians respecting the exhibition of emetics in the chill. Wilson Philip* says. "The most effectual means of bringing on the hot fit is the operation of an emetic, Celsus, Senac, Riverius, Huxham &c. are decidedly in favour of the practice and give many authorities in support of it." We are disposed to adopt as the safest plan that practiced now by the best physicians of England and this country viz. to give the emetic so as to operate before the ague comes on. In old, debilitated and cachectic persons, more powerful stimuli are frequently demanded as a compound of Carbonate of ammonia & Camphor Spts. of hartshorn, wine, wine whey &c.

Means used during the hot stage

The patient should not be refused cold drinks, as cold water, lemonade, soda powders, other effervescing draughts, Spiritus Mindereri &c There has been much controversy respecting venesection in Intermittents, Senac, Pringle, Cleghorn, Rush, Hoffman, Johnson, Potter, Cooke, Jackson &c all have employed

* Wilson on Fevers vol 1. Page 84 Hartford 1816

it, and all recommend it in the highest terms, some of them almost without discrimination, others of them with certain very necessary restrictions. Says Gregory* "We have the assurance of Pringle and Cleghorn, that in warm climates and seasons, it is a safe and proper practice, rendering the intermission or remission more complete, taking off that inflamatory diathesis which counteracts the beneficial effects of bark, and removing those pleuritic and rheumatic affections, and those symptoms of congestion in the brain which are sometimes complicated with ague." When there is increased excitement, and an inflamatory diathesis, violent local pains, difficulty of breathing and full hard pulse we should bleed to the amount of ten or twelve ounces; it shortens the fit, reduces the pains, promotes the action of cathartics and prepares the system for the reception of tonics. Vernal intermittents and winter quartans almost always demand venesection. We can lay down no certain rule respecting the abstraction of blood. It is a question upon which the judgment and experience of the practitioner will enable him the better to decide. When it is used it must be in some of the first paroxysms, as in protracted cases, the debility is generally very great and the

* Practice vol. 1. Page 124 Phila. 1826

patient cannot bear depletion. The abstraction of blood should be confined to the hot stage.—

As it is our object to promote perspiration, we shall find it sometimes necessary besides the drinks above recommended to use those remedies which are more powerfully diaphoretic, as Antimonial powder, James' Powder, solution of Tart. Antim. &c. Opium alone, or in the form of pulvis Ipecac. compos. has been highly recommended by numerous authors. Lind more especially was a powerful advocate for opium and used it in the hot stage of Intermittent Fever. Wilson Philip* in explaining the modus operandi of opium says "The effect of opium, on which the benefit derived from it in agues appears to depend, are the impression it makes on the nervous system, and its increasing the action of the heart and blood vessels, which being combined with the effects of those medicines that relax the skin, tend to induce perspiration." When, by the well-directed use of the above means, free diaphoresis is produced, they may be discontinued, because they have had their desired effect. All we have now to do is, to avoid any thing that may tend to check the perspiration, and if the strength is much reduced, to support the system with gentle stimulants. The fever is now evidently declining, and the paroxysm hastening to a close.

* Wilson on Fevers Vol. 1 – Page 118 Hartford 1816

This is the time that we prefer seizing upon, to exhibit one of the most important of our remedies; and one which all agree in declaring to be indispensible viz. a Cathartic —

The liver from the great quantity of blood collected in it in a paroxysm of ague is stimulated to an increased secretion — large quantities of acrid bile are thrown into the primæ viæ, which together with other irritating matters in the intestines, has a decided tendency to continue the fever & prevent the action of tonics on the System. Without their evacuation the disease is obstinate and difficult to remove, we therefore administer Calomel fifteen or twenty grains, if it should not operate in five or six hours, a moderate dose of any mild Cathartic, as Castor oil, Epsom Salts, Seidlitz powders &c. should be taken to promote the operation. If the patient be young and strong, especially if there be any nausea and distress about the stomach, and an emetic has not been given before, we decidedly prefer an emetico-cathartic composed of Calomel fifteen grains and Tartar emetic one and a half grains. We have known this latter prescription used in a number of cases with the best effect. We prefer the course we have prescribed above of exhibiting our evacuant medicines at the close of the paroxysm; because by so doing, even if the fever should be of the quotidian type, the operation of the

medicine will be over in time for us to use the remedies to prevent the next paroxysm.

Treatment during the intermission

As our cathartic or emetico-cathartic medicines were administered at the close of the paroxysm, their operation will not be completed untill some time during the intermission. When their effects have passed off, then and not till then should we commence the use of our tonic medicines. Of all the tonics which have been employed, the different species of cinchona, or preparations from it are first in the esteem of the profession almost universally. They are now considered specific, and exhibited to the almost entire exclusion of every other remedy of the tonic class.

The Peruvian Bark was first brought into notice by a remarkable cure performed with it on the Countess of Cinchon, Lady of the viceroy of Peru in the year 1640. Its virtues appear to have been known to the aborigines of that country long before that period. The fame of the remedy rapidly spread throughout Spain, Italy, France, Germany, England &c. At its first introduction in those countries there was much opposition to it; and the minds of the people were filled with many foolish prejudices against it; which continued to oppose a powerful barrier to the general em-

ployment of the remedy for a long series of years. Finally its powers in the cure of ague were fully established by the experience of scientific physicians; and as we have remarked before, was almost universally admitted into practice.

There are three kinds of bark generally used in the practice of this country viz. the pale, yellow and red bark.

Various have been the opinions with respect to the particular principle of cinchona, in which its febrifuge virtues were supposed to reside. Some chemists placed it in one principle some in an another, until by the united exertions of the justly celebrated chemists M. M. Pelletier and Caventou of France in the year 1820, it was discovered to be possessed by two alkaline principles; to which the names of Quinia and Cinchonia have been given. It has been ascertained by the analysis of scientific chemists, that the pale bark produces the cinchonia; the yellow bark the quinia and that the red bark contains both of these principles. We therefore conclude, that as the red bark contains both cinchonia and quinia, it is decidedly superior to either of the others which contains only one of them; and as experience has demonstrated that quinia possesses superior febrifuge virtues to the cinchonia; that yellow bark is superior to the pale

Much has been said concerning the modus operandi

of cinchona in Intermittent Fever. It may act by imparting a peculiar tonic action to the part to which it is applied, and propagating the same action to all the other parts of the system by nervous sympathy. May not cinchona act by being absorbed immediately into the circulating mass of blood; and thus by being brought directly in contact with every part of the nervous system, through the medium of the circulation, counteract the debilitating effects of miasma? Says Gregory* "The precise effect, produced upon the body by those drugs which are the most powerful in curing agues, has not been ascertained. They appear to concur in producing some strong impression upon the nervous system, which prevents the developement of fever" Says Wilson Philip† "We have every reason to believe that in whatever way the bark is exhibited, its effects in the cure of agues are to be attributed to its action on the nerves of the stomach and intestines".

After the system is prepared according to the directions above given; and there be no dryness of the skin and febrile action, we may commence the use of the bark immediately. The preparations usually employed by practitioners are the bark in powder, extract, infusion, decoction and tincture.

* Gregory's Practice Vol. 1 Page 126 Phil.a 1826

† Wilson on Fevers Vol. 1 Page 121 Hartford 1816

When the stomach of the patient can bear it, we prefer exhibiting the bark in powder in the dose of ℥j or ℥ij in a wineglassful of wine every two hours. Its efficacy is increased by various additions; the following are very valuable formulæ

Red bark — — — — ℥ij
Sub-carb. of potash — gr xij
Virg.a. Snakeroot — gr xij
The whole to be taken every hour

Red bark — — — — ℥j
Carbonate of soda — ℥iß
Virg.a Snakeroot — ℥ij
Divide into eight equal parts. one every two hours

℞ Red bark — — — — — ℥j
Super-tart. of potash — ℥ß
Cloves — — — — — ℥ij
Cinnamon — — — — ℥ß
Virg.a. Snakeroot — — — ℥ij
Lisbon wine — — — 1 quart
M. Dose a wineglassful every 3 hours

℞ Red bark — — — — — ℥ij
Super-tart. of potash — ℥ij
Cloves — — — — — no 60
M. Dose ℥iß every three hours.

If the medicine should produce catharsis, it will be proper to add a few drops of Tinct. Opii to each dose.

Many stomachs will reject the bark in substance; we have then to employ some other preparation. The most approved is a combination of the infusion or decoction and tincture in the proportion of ℥j of each every 3 hours. In this mixture we obtain the virtues of both the resinous and gummy principles which advantage could not be had by using either separately

In preparing the infusion and decoction the vessel should be covered or stopped, to prevent the escape of the aroma; and to exclude the atmospheric air, with the oxygen of which the active matter of the bark is supposed to unite and is precipitated.

If all the above preparations should disagree with the stomach after fair trial; it may be beneficially used in the form of enema combined with a little laudanum. This mode of exhibition is particularly applicable to children, who cannot be prevailed on to take it into the stomach. Bark is also said to have produced very marked effects as an external application, either quilted in a waistcoat, or the infusion used as a bath.

But these inconveniences are now remedied by the introduction into practice, of the alkaline principle of Cinchona in the form of a sulphate, called the sulphate of quinine; which possesses in an eminent degree all the tonic virtues of cinchona, and which has almost entirely superseded the employment of every other preparation of bark in periodical fevers. Extensive experience has fully established its preeminent virtues in the treatment of Intermittent fever. Its usual dose is from one to three grains every two hours; 10 to 20 grains have been given in urgent cases.

The following formulæ are in general use

℞ Sulph. of quinine — gr XV	℞ Sulph. of Quinine --- gr xij
Elix. of Vitriol ---- ℥j	Elix. of vitriol ---- ℥j
Water ——— ℥viij	Lemon Syrup ---- ℥j
M. Dose tablespoonful every 2 hours	M. Dose teaspoonful every 2 hours.
℞ Sulph. of quinine — ℥j	℞ Sulph. of quinine -- ʒj
Sherry wine --- 1 pint	oil of Capsicum --- gtt. VJ
M. Dose wineglassful 3 times a day	M Divide into 10 pills. Dose 1 every hour

℞ Sulphate of quinine ---- gr VJ

Sulphate of Morphine ---- gr j

M. Divide into 6 doses; take one every 3 hours.

If the disease is malignant and threatens death if another paroxysm should occur, the bark is to be given in much larger doses, combined with Capsicum, piper nigrum &c. Or the Sulph. of Quinine may be exhibited in eight or ten grain doses combined with oil of Capsicum every 2 hours.

When there is great hepatic or splenic affection Calomel should be used with the tonics, 1 grain night and morning.

Various other medicines both vegetable and mineral have been made use of by practitioners in the treatment of Intermittent Fever. The following from the vegetable kingdom have all been used and all recommended

in aqua. We shall arrange them according to their powers beginning with the best. Cusparia Febrifuga, Salix Latifolia, Cinchona Caribbea, Cinchona Jamaciensis, Cornus Florida, Liriodendron Tulipifera, Prunus virginiana, Swietenia Febrifuga, Quassia Simaruba, Dyospyros Virginiana, Swietenia Mahagoni, Gentiana Lutea, Aristolochia Serpentaria, Acorus Calamus &c. Among the mineral preparations the Oxide of Zinc, Rubigo Ferri, Phosphas Ferri, Sulphate of Copper, Sulphate of Zinc &c., have all had their advocates; and been employed with considerable success.

But of all the remedies from the mineral kingdom that, which has been crowned with the best success and which is now most frequently employed is Arsenic. The preparation called Fowler's solution is the one commonly used, which may be administered in the dose of eight drops three times a day; gradually increased until the dose is twenty five drops, when the daily augmentation should cease. With many constitutions it entirely disagrees and cannot be used. When swelling begins to appear about the face or other parts of the body, its use should be discontinued. This article in the Intermittents of Children is very valuable, as they will take it when no other remedy can be administered.

Means used immediately preceeding the paroxysm to prevent it

It is a common opinion, (and we have known it verified in many instances) that if we can interrupt an expected paroxysm, we lessen greatly the liability to future paroxysms, and put an almost final termination to the disease. With this important object in view we use the following remedies. An emetic of Ipecacuanha administered before the chill is expected, just so that its operation may be over when the ague comes on, is used with great success by practitioners. It appears to operate by promoting perspiration, and making a strong impression on the nervous system; we should then give thirty or forty drops of laudanum, cover the patient up warmly in bed and supply him with warm drinks, and make warm applications to the feet.

In order to secure the effects of both the emetic and opium, Dover's Powder fifteen grains, followed by a draught of acetate of ammonia, as recommended by Dr. Fordyce has succeeded perfectly. It produces free perspiration and effectually prevents the paroxysm. Not content with the above means more powerfully stimulating and heating medicines have been employed as laudanum and hartshorn, Camphor & opium & æther mixed, a mixture of garlic, mustard & capsicum,

black pepper in spirit, spts. turpentine &c. Blistering to the back of the neck; applying tourniquets to the arms or legs, and lastly the cold affusion & immediately getting in bed between two blankets to bring on perspiration, have all been recommended.

If notwithstanding our exertions the paroxysm should occur, we must carry the patient through its different stages, pretty much as has been already pointed out; with the exception of depletion and evacuation, which cannot be carried to the same extent. We must repeat the means prescribed during the intermission; and thus by being unwearied in our efforts and obviating all urgent symptoms, we shall bring the disease to a happy termination and releive our patient.

An Inaugural Dissertation

On

The Nature and Treatment of

Gun Shot Wounds

Submitted to the Examination of
The Provost,
The Trustees and Medical Faculty
of the University of Maryland,
For the Degree of Doctor of Medicine
By

Henry N. Martin of Maryland

March 1832

To

John S. Spence, M.D.

This is gratefully inscribed
as a feeble Testimonial of respect
for Talents, acquirements and
Integrity of Character, exhibited in
Professional as well as in Political Life

A. V. M.

The general introduction of Gun Powder into the military operations of contending Nations, and its use by the peaceful citizen to defend his home and fireside from the assaults of the plunderer, render the wounds inflicted by the explosion of this article of frequent occurrence. The severity of such injuries and the fatal effects so often consequent upon them, require the Surgeon to be well acquainted with their nature & treatment, that he may afford prompt attention to his suffering patient.

Gun Shot Wounds are severe contusions, suddenly and rapidly effected by the projection of a solid body from Fire Arms. In such wounds a portion of the structure is actually destroyed, by the force of the projected body and severe injury is always inflicted upon adjoining organs.

These wounds were formerly supposed to be peculiar or specific in their nature: every varia-

tion of appearance and every effect upon the mind of the patient, were carefully noted as illustrative of the Specific character of such wounds. The Treatment was consequently complicated, but it has recently been much simplified & Modern Surgeons deny any difference, except that the instrument with which it is inflicted is different and that it passes with greater velocity through the injured part.

The appearance of these wounds is so various that no two present precisely the same appearance. In an ordinary wound from a Musket or Pistol ball, we have an orifice nearly corresponding in size to the ball, the edges are inverted and of a dark, discoloured, livid appearance. If the ball has passed out, we have another orifice larger than the former, less livid, more ragged and with everted edges. The hemorrhage in such cases is inconsiderable, and the

is also little pain, unless a large artery or nerve be divided and for some time he only complains of a sensation of weight in the parts.
A wound thus made, may be compared to a canal or hole the parieties of which are in different states; the internal layer or the parts with which the ball was in contact, is completely destroyed ~~destroyed~~; the next is lacerated and contused; while the third is in a state of simple contusion with a total or partial suspension of its functions.
The constitutional symptoms are also variable. A soldier will occasionally have a limb carried off or shattered and exhibit little agitation of body or mind. While on the contrary we frequently find the most alarming symptoms arising from the violence of the shock, prostrating the system. These symptoms gave rise to the idea, that such wounds were

poisonous. The patient is found with a sensation of sinking, deadly pale, failing pulse profuse, cold & clammy perspiration, with incessant vomiting and universal tremor. The patient sometimes dies in this collapsed state. More frequently reaction takes place. Gun Shot wounds differ from incised ~~differ from incised~~ & punctured wounds in their direction and depth. Dr Hennen mentions several cases in which the ball took a very circuitous route. In a case which occurred to his friend, the ball entered near the Pomum Adami, passed around the neck and was found near its entrance. This will also occur when a ball strikes upon the Thorax or Abdomen or any convex organ.

These wounds differ from each other in several particulars. 1st According to the form and nature of the projected body.

2nd The velocity with which it is projected.
3rd The nature and peculiarities of the parts injured
1st Bodies of almost every description are thrown from large guns. Bullets are the most common, but wounds may be produced by billets of wood, broken shells, nails &c; on board ships particularly from splinters which fly from the shattered boards. They are occasionally complicated with pieces of money, clothes and other substances contained in the pockets, being driven in with the projected body. A number of curious instances are on record of foreign bodies of large size, having been embedded in the soft parts. It is obvious that bodies of an irregular figure and large size must occasion greater injury than such as are externally smooth, of a rounded form and moderate size. Hence the more complicated the wound the greater the danger.

2nd. The velocity is the chief cause. By a law of Projectiles, the greater the velocity of a body, the greater will be the force with which it impinges on the surface. A musket ball when passing with great velocity, will cause greater injury than when nearly spent. For this reason the slough will be greater at its entrance, than at its exit. So also when it strikes a bone, if its velocity be great, it passes through without splintering it: but if it be diminished, it is turned off by it and only a portion of it will be destroyed. The ragged and contuted condition at its exit, is not so much to be attributed to its velocity as to the circumstance of its passing from a dense into a rarer medium. Also when its velocity is great, it passes directly through the limb; but if it be nearly spent, it may glance from it an angle

and pass out in a different direction from that at which it entered, giving rise to the appearance of its having passed through the body. The resistance of Ligaments, Tendon, Fascia, skin &c is frequently sufficient to turn the course of the ball. When the ball passes in this way under the skin, its course may be traced by a dusky or livid line and a tumour may generally be seen at the end of the line, corresponding with the situation of the ball. When the ball is passing slowly, it may strike the skin & pass off without injuring the integuments in the least degree, but the parts under the skin may be completely disorganized and a solution of continuity take place with a rupture of the vessels. When such contusions are received over vital organs, death is the immediate consequence

This was formerly supposed to be caused by the great agitation of the air, produced by the velocity of the ball. Hence they were called by the older Surgeons Wind Contusions. The agitation of the air is too slight to cause any injury whatever and never does any to the parts adjacent to the entrance of a ball.

The 3d cause arises from the nature and peculiarities of the parts injured. As parts of little importance alone or at the same time, a large artery, nerve or some important viscus may be injured. The sloughs generally enlarge by the Sanguinous inflammation and extend into the surrounding parts. It will also be aggravated by the pressure of foreign bodies, pressure of fascia &c which increases the inflammation and finally ulceration occurs for the

purpose of evacuating the sloughs.
In our Prognosis, we should be exceedingly careful, as sometimes large blood vessels are contused and there appears to be no injury, in a few days, however, a slough ensues and secondary hemorrhage takes place.
At another time various parts of the viscera may be injured and the Surgeon not be able to detect it, till it sloughs. This connected with various other circumstances, as the constitution of the patient, season of the year, Temperament of the individual liability to Tetanus &c renders the Prognosis very difficult.

Treatment.

The first consideration presented to the Surgeon is, to determine whether it shall be proper to attempt to save the limb or resort to immediate

amputation. This depends upon so many circumstances as the constitution of the patient, his habits, the season of the year &c that it is difficult to decide.
Larrey recommends that when a bone is broken into several small pieces and especially if connected with a Joint; when the soft parts are extensively contused with laceration of important arteries and nerves; when the limb is in an insensible ~~and~~ cold state, we must resort to immediate amputation, it being the only hope of saving the life of the patient. In private practice when the patient has led a temperate life and enjoys all the advantages, which, rest, suitable attendants and surgical skill can afford, there may be greater hopes of saving a limb under unfavourable circumstances. But when the

patient has to be transported in Baggage Waggons or crowded in Hospitals, badly ventilated with coarse diet and want of proper attendance, our reliance must be in amputation. So also when part of a limb is carried away, it is necessary to amputate, for by so doing we have a smooth, clean stump, instead of a ragged and uneven one. This makes the limb much more valuable.

After amputation has been decided on it has been disputed, at what time it should take place. No one will pretend to say, that if the patient be labouring under a sense of weight, with feeble pulse, irregular chills, change of colour and other symptoms of collapse, that a limb should then be amputated. In such a case the treatment should be, by suitable fictions,

counter irritants and (if the pulse be very feeble & prostration great) by stimuli cautiously, to induce reaction. The proper time of performing Amputation will, therefore, be as soon as reaction has taken place and always before inflammation has been developed or any other constitutional symptom is manifested or before any disposition to Gangrene has commenced in the limb. That this is necessary is proved by several circumstances.

1st The patient is more willing to submit to an operation immediately after an accident, for by confinement and long suffering the patient becomes weak and nervous.

2nd A simple incised wound is substituted for a dreadful lacerated and contused wound, which threatens the greater danger ~~to the~~ patients life.

3d The aggregate amount of suffering is far less than that arising from a long and tedious confinement, from the irritation and inflammation caused by foreign bodies, spicula of bone, with incisions for their extraction, which must be the case in efforts to save the limb, in addition to which, the discharge of matter weakens the patient and endangers ~~the~~ life. 4th The patient will not only suffer less, but his chance of recovery will be greater a few hours after the accident than when worn out by long suffering.
5th If he escape with life the limb from being shattered and deformed, instead of being useful, will only be a source of annoyance, not half so serviceable as an artificial limb. He will sometimes have ultimately to submit to an operation.

when the injury is of less importance or situated on the Trunk. The indications will be. To remove foreign bodies, To prevent inordinate inflammation. To regulate inflammation and hasten sloughing and To facilitate the discharge of Pus.

It was formerly the custom among Surgeons to have recourse to free incisions for the purpose of extracting foreign bodies. This was done to avoid the inflammation caused by the presence of such extraneous bodies, to relieve the pressure from extravasated fluids and it has also been supposed that these incisions converted a dangerous contused wound into a more manageable incised wound.

Experience, however, proves that more injury is done by the forcible extraction of foreign bodies (in ordinary cases) by probes

and forceps, than would result from suffering the ball or other body to remain. The ball is usually in contact only with dead parts and finally becomes encysted or will become loose from the removal of sloughs, when they can be removed with comparatively little difficulty. In endeavouring to extract small, round bodies, there is great danger of doing violence to large arteries and other important parts by a minute examination of such wounds with probes; serious hemorrhage will be produced which might otherwise have been avoided. The surgeon, therefore is less anxious for the removal of foreign bodies in Gun Shot wounds, than in others. It is difficult to convince the patient labouring under severe pain, that he will not be relieved by the extraction of the body which has caused it.

If the ball has passed nearly through the limb and is only prevented by the integuments from passing out, we should at once by incision relieve the wound from irritation caused by it. It will also be necessary to resort to incisions for the removal of bodies, which impede the functions of important organs as the Oesophagus Trachea, Brain &c even when deeply lodged Incisions must be made also for the purpose of securing large arteries, to restore viscera when they protrude and if there be reason to suspect fracture Cranium or depressed bone, we are justifiable in making free incisions for examination. But the practice recommended by Boyer & others of resorting to incisions for the purpose of removing <u>all</u> foreign bodies, of changing its nature &c cannot be too severely repre-

hended

nor can they relieve tension, for they direct the wound ~~the wound~~ to be filled with lint, by which the inflammation is always aggravated. The rule given by Mr Cooper is of great importance. That incisions should only be resorted to when some obvious advantage is to be gained.

Instruments of various kinds have been recommended for the extraction of foreign bodies. Bullet drawers or large clumsy Forceps should not be used. The fingers are perhaps the most proper or a long slender pair of Forceps with fine teeth should be used. Bougies and Catheters have also been recommended.

The dressings should be of a simple and unirritating nature, They should be selected according to the common plan of treatment. Suppuration must take place

consequently poultices may be used with advantage since warmth combined with moisture is well calculated to induce suppuration. They are useful by softening the skin, promoting perspiration, lessening the pressure and determining to the surface. Plasters of simple cerate confined by adhesive straps have also been recommended.

To prevent <u>inordinate</u> inflammation we must have recourse to cold and astringent applications, as Saccharum Saturni, Muriat Ammonia, evaporating lotions &c. Boyer recommends a solution of Salt. After inflammation has occurred, we must endeavour to prevent its running into Fangene by the continuance of cold and astringent applications at the circumference, while at the same time we encourage suppuration by poultices at the orifices.

We can sometimes prevent these symptoms by relieving the tension and at the same time evacuating the matter. Caps and Leeches are of great importance in stopping the progress of inflammation and in some cases it is so violent, as to require the whole of our Antiphlogistic plan. Hence the danger of covering the limb with hot poultices. The suppuration and sloughing occur about the tenth day. When small they can be easily managed. The Pus, from the extent of the wound and nature of its cavity cannot always have a regular outlet and a Fistula is formed. This must be treated by incisions or by the introduction of a seton through the whole extent of the Canal. This will generally produce a sufficient degree of inflammation to unite the parts. The use of wax Bougies

and Sponge Tents for the purpose of dilating the external opening has been recommended by Dr. Physick.

The General Treatment is to be conducted upon the common principles, we are to induce reaction by the use of frictions, warm Enemata use of Stimuli &c if the prostration be great.

When reaction has taken place, the antiphlogistic plan must be resorted to. If the patient be of robust, plethoric habit, the Lancet may be used with advantage. Great caution is, however, necessary to be observed particularly in hot climates and hot weather or we shall render the patient liable to Tetanus. Care should be taken not to reduce the strength of the patient too much, or his constitution will not be able to endure the long confinement and suffering, which is so common in cases of this kind.

Particular attention should be paid to the condition of the Digestive organs. If the bowels be constipated, gentle purgatives should be administered. If the ~~skin~~ be not in a healthy state and the system be not sufficiently excited for the use of the Lancet or if its use be forbidden by irregular habits, the Antimonial preparations in nauseating doses will have a beneficial effect.

An

Inaugural Dissertation

on

"The Production and Growth of the Fœtus"

Submitted to the Examination

of the

Provost - Trustees and Medical Faculty

of the University of Maryland

For the Degree of Doctor of Medicine

By

Edward H. Calvert Jr.

of Maryland.

To the honourable professors of the University of Maryland —

The time having arrived in which it becomes me as it has other graduates of this Institution to deliver into your hands, a thesis, the index of my present acquirements in the science of medicine; you will not suffer this my attempt to elucidate that subject on which I have written to pass unnoticed, nor cast it from you with indifference.

Since you may say what is the opinion of a graduate, having the opinion of learned men, long devoted to the science of medicine; & especially an opinion neither selected from their works, nor before perhaps advanced by any. Many truths are yet unrevealed; the knowledge of medicine is scarce worth acquiring; for it is done has not painted its outlines with perfection, nor its inner with more than rough work: a Doctor gives a medicine, is he certain of its effects? he produces an effect, is it the effect desired? he applies a remedy, is it without doubt? how often are the old woman's nostrums, & quack's poisons, seen to

bear off the prize from the most skillful physicians is the
yet to such men as have contributed to improve the
science which has rendered so much timely relief to the
afflicted in their different perils &c, much praise is due.
Therefore not bound down by the opinions of other men,
who would confine the science to certain limits, I have
thought proper to lay before you my own views of the
subject of which I have written, true or false, it may be
found useful — —

Dissertation

On the production & growth of the fetus —

Preliminary Remarks

In order to comprehend the works of the great Architect of the Universe; it seems necessary to begin with such as our minds may most easily acquire a knowledge of; I have for I begin by giving with the production & growth of a tree, saying some thing of the manner of the production of beasts, for as yet Anatomists have not found any line of demarcation, by which vegitables may be always distinguished from beasts, nor beasts from man, throughout their structure; allowing,

that the transient state of man superior, is the permanent state of an inferior animal.

From the meanest of the productions of the Earth, to the most exalted of man; we see nothing but dust under some peculiar change. Whether that change be wrought by a chimicle, Physicle, vitae, or mental action or else by the united power of all.

The manner in which he, who pronounced all flesh to be as grass & man to be of the dust of the Earth, has made this, is not as yet been revealed to man.

When we see grass feeding upon Earth, beasts upon grass, & men on beasts, how could we say the body of man was more than an earthly tabernacle - (or of earthly structure)

Production of trees

In trees I have found four sorts of sap necessary to their growth & production; the seed shoots forth alone the earth putting forth twigs & leaves, this being the first produced, I call it the male part of the tree with two sorts of sap, one producing the leaf, the other the branch; for not as yet has the flower bud developed itself which as it brings forth the seed the embrio of a future tree I

call it the female part; which also possesses two sorts of sap one for the flower the other for the soft part of the ripe fruit. Having spoken of four sorts of sap one for the leaf, one for the twig, one for the flower, & one for the fruit; it seems that a union of this sap is necessary to produce the seed, which at first seems only a shell containing a watery fluid & perfected as the fruit ripens; & in truth resembles the semen of man as I will show when I come to speak of it. In the flower we see the stamen or male part from which arrises the anther & there the production of the male sap from the leaf & branches; the the pistillum or female part, a part of the flower bud, the anther drops its farina in the pistillum; which farina changes to the corculum of the seed & is surrounded by the cotilledons the production of the female part & a skin, being cast over then the seed is formed.

Has any thing been seen among man like this, that he should beget upon himself a likeness of his own image? In the formation of man & woman we see a one a likeness; Adam being the first made, after time Eve grew out of his side so as separated by the

hands of God, showing that perfection which we enjoy
we trees, seperated from a fleshy union to be joined
again by the spiritual tye of Matrimony.
The seed being planted in the earth & heated by the
sun begins to absorb when the cotiledons act as an
absorbing medium between the earth & the corculum,
through which absorbing medium or placenta it will cole
it; the earth gives nutriment to the corculum which soon
expands & shoots above the earth

Of the Egg

In the egg we see for the female part the yolk & the white,
while for the male part we see the Freddle & the shell
mixed or mixed with the white, & so long as there is not
sufficient heat enough to produce an action in the vessels
between the Freddle & yolk, no absorption goes on &
no developement in the parts of the Freddle — these things
I have spoken of to show the resemblance between
plants & beasts, in order to give some insight to my
views of the production & growth of the human fetus —

Production & growth of the fetus —

A wild young practitioner called me to observe

some of his tricks; from an erected penis he had squeezed out a portion of semen, asking many things respecting it, from many views of the subject he had remarked that much semen might always be forced out during an erection & that it was the first semen by youth in this arising to materiality, this is not ~~the~~ any of that semen which is stored up in the vesicles, but of a distinct kind; & when held between the fingers & thumb & examined it was like a thread curled up ~~& & & & fine & like a hair~~, & being easily uncurled or stretched out unwound itself showing an elastic quality & when the fingers were held apart it dried & resembled a white hair, & not distinguished from one of the convolutions of the testes when dry; from which appearances I was led to those observations which I now have thought fit to place under your consideration. In these tubes a fluid is formed, & known by anatomists to collect in the vas deferens, & to be deposited in the vesicles. This semen which I have called a convolution of the testes, & which is seen during an erection to be lodged in the corpus spongiosus or urethra, appears to be carried from the

testes by a more direct course than that of the vas deferens
yet as anatomists have shown no other vessels to carry it; and
we are as much at a loss to account for it, as physiologists
are for substances carried immediately from the stomach
to the kidneys. This convolution of the testes if such it
be; & such it is, if appearances deceive me not; appears to
me the fœtus in ovisac, & from its being wound up like
the intestines of a tadpole, has been mistaken by some many
for a tadpole; or the animalcule discovered in the semen
by some sex alists, & of which so much has been said. Here
I must remark that as it was in the beginning, so it is now
seen, that man is not the product of woman, but of man.
These tubes, resembling a cherry stone before perfected in the ripe
fruit a shell filled with fluid, requiring the womb for to
perfect it by adding other fluid, & to develope its parts in the
form of a fœtus; it resembles more a simple earth worm when
extended; & why might it not even tho divided be able as the earth
worm to take on a perfect form again, but while it may perish
if divided & it may require a complete convolution to form a fœtus.
The semen which is deposited in the vesicula seminalis
if when rightly considered be found no more than

increment vicious matter which the having filled the vesicles throw off the redundant portion with the urine, so that what remains in the vesicles is merely deposited here to drive out the tube from the urethra: so that the penis when erect may be compared to a loaded gun the ball of which is the tube & the powder the semen from the vesicles, propelled forward by the force of the ejaculator, it throws the tube in the uterus. Here I may remark that the male & female parts are so blended together, like the bud of a tree containing other buds within it, & this bud male & female parts less & less perfect, that is it hard to tell if man is a perfect male or possesses both male & female organs; & I am rather inclined to think, that man possesses female parts, & woman male parts, & that male is imperfectly divided from female, & need so to be; while in man we see the prostate gland & vesicles resembling the womb & ovaries of woman, in woman we see the clitoris resembling the male organs, & such an arrangement necessary for the production of the species — Having now spoken of

two semen peculiar to man filling the testes as men, & fluid of the vesicula's another, I shall next speak of these as peculiar to women; the one the ova, the other the secretion of the womb: tho the prostate of men may secrete a fluid I judge it not to differ from the secretion of the womb of females. This I state not of knowledge but of opinion; men may attempt to prove things by experiment, but many false doctrines have arrizen from experiments as otherwise; the Chinist may say my doctrines are proved by experiment, but he only thinks so; the practitioner may say my doctrines are drawn from the bed side & must be true; but truth is not in experiment nor observation but in the mind that is able to divide the chaff from the grain; therefore I decline my assertions to want no other proof than the sanction of the reader, if false they may perish, if true they will find others to build upon them.

Having said that the ova & secretion of the womb are the two semen peculiar to woman & necessary to the production & growth of the fetus, I will here remark that like that of the vesicula's

they are only subservient to the tube, or as I will call it the fetal outlines. These arising from the mind or other cause an increased action (or irritation in the testes), by which the tube is seperated & conducted to the penis by a passage I cannot discover, it becomes a source of irritation & erection to the penis (ubi irritatio ibi fluxus) reaching thus, place the stimulus is sent back to the mind & the man desires communication with his wife or other woman, so as to destroy the excitement by emission, he encreases excitement by the act, & producing a spasmodic action of the ~~xxxxxxx~~ ejaculator seminis which empty the medicula's & reduces him once more to a calm, the semen is cast in the womb, the womb contracting during its excitement, conducts ~~xxxxxxx~~ the semen to the fallopian tube to meet the ova, which by the same excitement as seperated & lodged the tube of the testes in the penis of man, (or by sympathy) has lodged the ova in the ~~fal~~ fallopian tube: the two semen embrace & adhere together, & are gradually accomodated to the womb as their future abode. (It seems to me that a sympathetic feeling between male & female is necessary to the production of

the fetus) The seed is perfected in the falopian tube, & sown in the womb, the ova acts as the cotilledons of the seed of trees &c, when sown in the earth; it becomes that placentary map that is seen intiposed between the fetus & the womb, & aided by the stimulus of animal life, as the seed in the earth is by the solar rays, fluid is conducted by it to the tube; the ova being made subservient to the tube, brings the secretion of the womb also by a new action to subservience, to nurish & support this tube, untill its parts are developed. also the ova is seen to possess a peculiar life increasing in size as the fetus increases, & not having as in the eggs of birds gained its full size before the fetus; & the ambion corion &c covering the fetus as a shell -

While the fetus rests in the womb, various changes take place between it & the placenta; the placenta seeming to act first as the heart, second as the lines & third as the stomach of the fetus, but as these organs are developed in the fetus, so the placenta changes its action & the fluids begin to circulate in the fetus as its organs are developed -

Believing that the fetus lives by venous absorption, & supported

in such opinion by the Edr. Monroe, & by comparative anatomy which tho not altogether true would seem true in part, seeing that all are the works of one Creator, & of one substance formed.

Dissection & farther remarks —

Dissecting a cow with calf, I stripped from the cotyledons its covering, I perceived the veins were easily separated from the cotyledons, those veins that went to the fetus & carried its support were not seen to penetrate the substance of the cotyledons as I expected to find; but like the pia mater of the brain was merely expanded between their convolutions, they did not anastomose with arteries, & if they received not the fluid which they conducted to the fetus by absorption, I know not how they did receive it. ~~does not the pia mater [illegible]~~

Conjecturing that the fetus must first live by absorption; & becoming after a time pendulous from the placenta by a chord, the next enquiry was, by what means is absorption kept up, between the fetus & placenta, the placenta seems: if arteries anastomosed with the veins through the substance of the placenta,

then would the child live not by an independant life, but as a member or limb of the womans body, which I cannot believe: for if the child has not an independant life it would not arrive at perfection in a given period & release itself from the womb.

As soon as the heart begins to act, those organs about the seat of action are first developed, & the blood sent from the heart of the fetus to the placenta, acts as a stimulus to that organ, by which it increases in size, & its power of absorption is increased with the increased stimulus for the growing fetus, in order that the fetus may be fully supplied with nutriment until its vascular system becomes fully developed, the stimulus is then for the placenta to circulate through the fetus, & the placenta begins to decline.

The waters in the membrane that surrounds the fetus may be a secretion partly from the membrane & partly as perspiration from the child, which cannot be taken up again by the absorbents of the skin since they are said not to be manifest in an early age, (or not to be found). but I might ask by what means is a fluid taken in the stomach

for the lacteals to act in in order that they may unfold themselves; as I have already said that it cannot be by the skin; so I think also it cannot be by the mouth; but by a secretion from the liver & gave through the ductus coledochus & perhaps also from the spleen in which fluid the lacteals a thing, separate from it the chile while the other passes down as meconium —

A few remarks more & I will close this almost mistorious subject — The action of the heart first unfolds those organs nearest to it the arteries are developed from the centre to the circumference, & the veins from the circumference to the centre; the body & head move in the force of the heart first increase in size & last the legs & feet & the child when having grown to its full stature is born placed upon the soft bosom of its mother to regale with pleasure on the milky fountain —

Edwd H. Calvert Md. maryland

An
Inaugural Dissertation
on
Chorea Sancti Viti
Submitted to the Examination
of the
Provost Trustees
And
Medical Faculty
of the
University of Maryland
for the Degree of Doctor of Medicine
By
Thomas C. Hirst St. Mary's County Maryland
Ordinary Member of the Baltimore Medical Society

To

Doctor Thomas H. Wright whose great attainments in every department of Medicine are only equalled by his Modesty, this imperfect essay is inscribed as a small testamony of esteem for his many virtues by one who is proud to style himself his friend and his pupil the

Author

Chorea Sancti Viti

Derived from the Greek Χορεύω a choir which gene-rally accompanies dancing and St. Vitus because the followers of St. Vitus were peculiarly subject to it or because women labouring under this affection were in the habit of visiting the Chapel of St. Vitus every anniversary in honour of him when they danced with all their might until they fell down exhausted with fatigue from which time they fancied themselves cured for one year. This disease like many other chronic affections was until recently but badly described the first distinct accounts of which are found in the writings of Plater and Sennertus who lived about the sixteenth century. Some speak of it as having existed at a much earlier period and to have prevailed throughout Germany as early as the year 1374 when it was considered to have been the malicious doings of Satan requiring for its cure recourse to exorcism. To Modern pathologists we particularly indebted for a correct account of this disease as well as all other maladies to which the

human family are subject. But in extending our thanks to them we must not pass over in silence the illustrious Sydenham whose brilliant genious and unbounded philanthropy commences a new Era in the Science of Medicine; from him did all the suffering and maladies of Mankind receive an equal share of investigation and by him were they alleviated and rendered more tolerable. His description of Chorea was adopted by every succeeding author until the work of Dr. Hamilton on purgatives which made its appearance in 1808 since which time it has been variously treated and by none better than by our distinguished professor of Practice Dr. Potter whose views of this disease are the most accurate and consistent of any that have yet appeared and will serve as a model for every succeeding author. This disease is not confined to man alone but attacks also other animals a striking instance of which is related by Professor Potter of a horse having been attacked with this disease assuming all those gesticulations

which characterizes it in man. Chorea usually makes its attack between the sixth and sixteenth year but sometimes varies from the above period occurring though rarely in infants and sometimes above the age of sixteen.

Symptoms Chorea rarely if ever makes its appearance suddenly. it shows itself gradually varying in its accession from a few days to several months. The first symptoms are pain in in the stomach and bowels, flatulence, uneasiness in the precordial region as if there was an oppressive weight, the appetite is changeable; there is constipation, occasional vertigo, timid and hard abdomen, tremors and heaviness of the extremities, visual illusions, confusion of mind, a feeling of tension in the forward, itching of the nose, cold feet, variableness of disposition fluctuating between cheerfulness and gloom, all the above symptoms usually succeed each other by degrees. Then succeed irregular muscular and spasmodic twichings of the muscles of the face and extremities; these spasmodic contrac

tractions are at first slight appearing after any inordinate emotion; they gradually increase until all the muscles of the body are involved producing violent involuntary contractions. Not unfrequently the morbid involuntary contraction is confined to one side and this is usually the left, causing the patients carriage to be faltering, unsteady and irregular. Cases are related of the patient having the arm of one side and leg of the other affected which are exceeding rare. Not unfrequently the involuntary contractions are so great as to preclude the possibility of the patients progression and form of an erect position. Sometimes the hands and arms are in constant inordinate motion, so much so that the patient loses all control over them and in his attempts to carry food or drink to the mouth he strikes his chin, nose, cheeks and every part but the right. but after many unsuccessful efforts and the loss of a part he at last succeeds. The contraction of the muscles is often exceedingly violent

giving to the expression the most hideous, frightful and unseemly appearance. The muscles of the head lose their accustomed power and it falls to one side. In fact the will loses all controul over the muscles and the body like a ship in a storm the gubernator no longer presiding is carried to and fro until auspicious providence comes to her assistance: so with a patient labouring under Chorea the involuntary contractions continue their ravages until remedial aid is extended to him. Deglutition is difficult and sometimes impossible, articulation indistinct the voice altered and respiration anxious on account of the morbid contraction of the pharyngeal, laryngeal and respiratory muscles. At first there is an expression of good humour and cheerfulness in the countenance, but by degrees the eye loses its brilliancy the face becomes pale and there is a general expression of languor and depression. The patient loses his intelligence and occasionly becomes fatuitous in obstinate and severe Chorea.

Paralysis sometimes occurs. Dr. Clarke mentions a case which came under his notice, affected with this disease in which slight hemiplegia and amaurosis took place which continued about two years & afterwards yielded to the treatment, the patient was completely restored to health. This disease attacks in various forms producing sometimes dancing, leaping, jumping and other antic gesticulations; sometimes the patient turns round upon his feet like a top, jumps upon chairs, beats his body and tears his clothes. Fever is not a necessary concomitant of this disease. Chorea is a paroxismal affection several distinct and irregular paroxisms occurring in twenty four hours. During the interval scarcely any spasmodic action exist, but when several violent paroxisms occur during the day there is considerable choreal action during the intervals, quieted only by sleep, volition being suspended. The disease sometimes takes a periodical form. The duration of the paroxisms vary from fifteen minutes to a day

Some writers assert that this affection is wonderfully assuaged or aggravated during the paroxisms by the touch of cold iron, the same effect is said to be produced by the affusion of cold water. Such are the symptoms of this disease which unless speedily checked gives the patient a permanent peculiarity of manner, impairs the intellect and entails upon him fatuity and idiotism or if these consequences do not ensue he loses a portion of the most useful part of his life. Cases are related of persons affected with this disease attaining a great degree of excellence in science but they are exceedingly rare.

Causes. First the predisposing confinement, low living, nervous temperament which is commonly acquired depending on a sedentary and inactive life, on habitual indulgence in sensuality, on morbid action of the brain produced by reading works of imagination characterized by great mutability of the determination and judement. By some it is said to be hereditary which I apprehend is only so much so as the temperament is con

~~as the temperament~~ is concerned or as the temperament is transmitted from the parents to children, atmospheric causes have been said to predispose to this disease on account of the unusual frequency of its occurrence some seasons.

Exciting causes 1st Mental emotion as fear, fright, disappointed love and ambition, any thing that suddenly excites hope terror &c. religious enthusiasm. 2nd Gastro intestinal irritation from accumulated fecal matter, worms, and other irritating substances, which are considered by Dr Hamilton the chief causes of this disease but which by modern authors are considered seldom the cause of this disease. 3rd Poisons as the long continued use of lead, stramonium, the improper use of mercury &c. 4th Repelled cutaneous eruptions are said to produce this disease as the sudden disappearance of small pox, tinea capitis or any eruptive affection. 5th Suppression of accustomed evacuations as the catamenia, the sudden drying up of issues setons &c.

Prognosis. Chorea though generally not a

fatal disease sometimes proves when it attacks persons labouring under pectoral affections, fluor albus or scrofula. Also when it changes into Epilepsy through the medium of the latter. Professor Potter says these two diseases are very nearly allied to each other. Epilepsy happily terminates in Chorea and sometimes Chorea unfortunately ending in Epilepsy. It sometimes attacks girls before the age of puberty and continues until the catamenia makes its appearance which if cured by medicine before that time apt to recur; when the consequence of suppressed catamenial evacuations easily cured by the restoration of the evacuation; when excited by worms successfully combated by anthelmintics or the expulsion of the worms: when excited by any inordinate emotion of the mind it is most unyielding. Chorea is susceptible of a spontaneous cure and generally the worst consequence which ensues from its protraction is impairment of the mind and fatuity which should by all means be taken into consideration.

Pathology. Concerning which various opinions have been advanced. Some place it in the Stomach and intestines. Some in the ganglionic System of Nerves and others with most propriety in the brain & Cerebro Spinal System of Nerves. Prof. Potter concerning the gastric pathology says that the increased gastric and intestinal secretions in the first passages are the necessary result of the weak and torpid state of the brain and nerves communicated to those viscera giving rise to slow congestions and their inevitable consequence vitiated secretion. It is not pretended that Chorea is usually attended by much fever and never by inflammation. There is no previous congestion in the brain; but an impaired energy extending to all its dependencies. It comports with this theory to remark that Chorea can almost in all cases be cured in its first state, without much purgation if the use of tonics be properly conducted; and that the accumulation of vitiated secretions is the consequence of the want of early attention and judicious management. These views appear to be very conclu

liver and have no room for further remarks concerning the gastric pathology. Those who allege that this disease is seated in the ganglionic system of nerves endeavour to account for it by asserting that gastric and uterine irritation is most frequently its exciting cause but with equal as much plausibility can these phenomena be accounted for by the Cerebro Spinal Pathology since the nerves from the Cerebro Spinal system ramify minutely through the stomach and uterus. By the latter pathology can we also account for the other phenomena developed by this disease viz. impairment of the intellectual faculty muscular contractions &c. From the above view I am led to embrace the Cerebro Spinal Pathology of this disease as the most rational and consistent since by it can be explained the various phenomena attendant on this disease.

Treatment. The indications in the treatment are 1st to remove the constipated state of the bowels. 2nd To invigorate the general system. 3rd to break up the spasmodic action. As Chorea attacking girls about the age of puberty nearly always

terminates spontaneously upon the accession of the paramenia we should not at first use Purgative means as it very frequently occurs when cured before the accession of the Menstrual evacuation. In this disease when the bowels have become constipated recourse must be had to purgatives but the indiscriminate use of them as advised by Dr. Hamilton are certainly reprehensible. It is only when this disease has been neglected in the beginning that they bowels become so loaded with bilious secretions. They may be evacuated by Calomel and Jalap followed by Oleum Ricini and also Enemata. After they have been evacuated the tonic course alternated if necessary by an aperient must be resorted to and persevered in. The tonics which have been used with most success are the quinine, bark, and most of the vegetable bitters Iron, Arsenic, Zinc and Copper. A perseverance in the use of these remedies seldom fails to perfect a cure. The eyes become more brilliant, the countenance instead of the gloom which clouded it, begins to assume an expression

of cheerfulness and vivacity and at length a recovery is completing. When the disease comes on after retained or suppressed menstrual evacuation, and there is a phlogistic diathesis, bleeding must be resorted to; after which emmenagogues are to be employed the chief of which are Aloes - Calomel, Sempervirens Sabina, Helleborus Niger, Carbonas Ferri, be the use of blisters and pediluvium must not be neglected; the blisters should be applied to the sacrum, An ointment made of the simple cerate and Ext. Belladona has been used at the Baltimore Almshouse with unparalleled success in bringing back the menstrual evacuation, rubed over the sacrum and pubis. Particular attention should be paid to the diet of the patient it should consists of farinaceous articles and other mild substances. When the disease attacks persons of a highly excitable state of the nervous system or where the nervous temperament is strongly marked benefit may be derived from the cautious use of the Anti-spasmodics and narcotics. The

following may be used valerian, Asafoetida Musk, opium, hyosciamus and Galbanum, and Sagapenum. When it is the consequence of suppressed perspiration or the retrocession of cutaneous eruption antimonials, Camphor, Dover's powder or any of the diaphoretics may be used. The warm bath, blisters, frictions with sulphur Setons & issues are useful. And when be minous irritation is manifest the use of anthelmintics.

An
Inaugural Dissertation
on
Pneumonia Biliosa;
respectfully submitted to the consideration
of
R. B. Taney Esqr. Provst,
the
Trustees, and Medical Faculty
of the
University of Maryland
for the Degree
of
Doctor of Medicine;
by
George W. Crum Md.
March 1832

Pneumonia Biliosa

This disease has been called pneumonia typhoides from the low type which it sometimes assumes; but as this is by no means always the character of the disease, as it is very frequently a disease of high inflamatory action, we think this term conveys an erroneous idea of the disease; pneumonia biliosa is certainly a much better term being more expressive of the nature of the disease. It prevails extensively throughout the middle and southern states of our country, being most prevalent in the winter and spring, and more especially when intermittent and remittent fevers have been more than usually severe during the preceding autumn. Males are the principal sufferers in this disease, females are less frequently attacked than males, and children less than adults; old persons are less liable to the disease than ~~than~~ those of middle age, and persons of a robust and plethoric constitution are more subject to it than those of an opposite habit of body.

Causes and pathology. This disease is generally produced by cold, operating on a constitution which had been previously exposed to the influence of marsh miasmata; or perhaps most frequently, these causes only establish the predisposition to the disease, which is subsequently brought on by the influence of some exciting cause; sudden vicissitudes of temperature, or sudden exposure to cold when the body is in a state of perspiration, is perhaps the most frequent exciting cause of the disease; it may also be excited by repeled cutaneous eruptions, translation of gout or rheumatism, or by the intemperate use of spirituous liquors. The influence of marsh miasmata is necessary for the production of this disease; as is evident from the fact that this disease is observed to prevail in low situations bordering on streams and marshes, where miasmata are generated, while in higher situations, where there is no generation of miasmata, we find pneumonia prevailing in its simple form; and we also observe, that persons from the more northern parts of the country, who are more susceptible of the diseases of marsh miasmata than those

who have been long exposed to it, are more obnoxious to this disease on coming into situations where it prevails, than the original inhabitants. The disease is a compound one, consisting of bilious remittent fever and pneumonia; and it partakes more or less of the character of one or the other of these diseases, according to the cause which has had the greatest agency in its production. The function of the liver is generally very much disordered in this disease; the predisposition to disease in this organ is produced during the autumn, by the influence of miasmata which has not sufficient power to produce intermittent or remittent fever; or one of these diseases may be produced, but not being perfectly cured, the liver may be left in a state of predisposition during the ensuing winter and spring. The lungs are more frequently affected by cold and vicissitudes of temperature than any other organ; because they are more exposed to its influence, the cold air which we inspire, coming directly in contact with the delicate mucus membrane lining the bronchii and air cells. By the influence of the cold air, action is diminished and the excitability accumulated

in the lungs, at the same time that there exists a predisposition to disease in the liver; and if a patient in this state be exposed to the influence of an exciting cause, these are the organs which will suffer; the secretions of the liver will be vitiated or diminished, or perhaps entirely suppressed; there will take place congestion in this organ, and the vena portae and capillaries of the stomach and intestines, and if the disease is suffered to progress gastro-enteritis will be the result. while these morbid phenomena are taking place in the abdomen, inflamation will be developed in the lungs, and it may be situated either in the substance of the lungs or the pleura, or the mucus membrane, or more than one of these structures may be involved at the same time. The inflamation if not subdued, may terminate in suppuration, effusion, hepatization, or gangrene. When an abscess forms in the substance of the lungs, the matter may make its way into the bronchii and be discharged by expectoration, or it may point externally and be thus discharged; if the pleura be the seat of the inflamation, pus may be secreted into the cavity of the pleura, giving rise to empyema. Effusion not ~~infrequent~~ unfrequently

takes place as a consequence of inflamatory action in these organs; an accumulation of a serous fluid taking place in the cavity of the pleura, constituting hydrothorax. Hepatization is also occasionally the result of inflamatory action in these organs; it consists in a change of structure, their appear resembling that of the liver.

Symptoms. The disease of the liver generally makes its appearance first; we have evidence generally, of the existance of disease in this organ, for two or three days before the accession of the fever. "A sense of fulness and tension is experienced in the right hypochondrium a few days previous to the supervention of the disease." A yellowness of the skin is also present for two or three days before the disease comes on; pains in the limbs and back as in remittent fever are among the premonitory symptoms, and also severe pain in the head, from which symptom it has been called head-pleurisy. The disease makes its appearance very much like remittent fever, with lassitude and nausea succeeded by a chill, or a sensation of heat and cold, gradually passing into a state of pyrexia; the pain in the head and other symptoms are much increased as the fever comes on,

and pain in some part of the thorax takes place, with cough and difficulty of breathing, though in some instances the pulmonary symptoms are very indistinct during the first two or three days of the disease. The expectoration is deficient, and somtimes tinged with bile; vomiting sometimes supervenes at the commencement of the disease, the matter ejected consisting in part of bile, but in some cases the secretion of bile is entirely suppressed in the commencement. The tongue is at first white with a streak of yellow along the middle, which gradually extends over its surface; in the commencement it is generally moist. The urine is of a yellowish colour from the presence of bile, tinging linen yellow which is diped into it; the pulse is increased in force and frequency, the heat of the skin is increased and its secretion diminished. The fever generally assumes the remittent type, the exaserbations taking place in the evening. Sometimes the pulmonary affection is the principal disease, the pain in the chest and difficulty of breathing being severe, while the hepatic and gastric symptoms are indistinctly marked, in other cases the latter symptoms predominate while the pulmonary

symptoms are slight; this is more frequently the case in the more southern parts of the country, where the patient has been much exposed to heat and miasmata; in this case the disease is more apt to assume a typhoid character, the vital powers being very much prostrated, the tongue instead of being moist and covered with a yellowish fur, is dry and of a dark colour, and the pulse is weak and frequent.

Prognosis. When the expectoration, which was diminished, becomes more copious and is of a thick consistence; when the urine deposites a lateritious sediment on standing; when the skin instead of being harsh and dry, becomes soft and moist, and returns to its natural temperature, we may expect a favourable termination of the disease. But when the expectoration although copious is of a thin consistence, accompanied with dark coloured blood; when the cough is very distressing, and when the lips exhibit a livid aspect, the chance for recovery is very bad; but in making up our opinion as to the probable termination of the disease, we should take into consideration all the symptoms which present themselves; and also other circumstances, as the age, constitution, previous habits of the individual &c.

Treatment. In the treatment of this disease, the principal indications are; the reduction of inflamatory action, the removal of the vitiated secretions from the stomach and intestines, and the restoration of the liver to its healthy condition. For the purpose of reducing inflamation, and controlling the action of the heart and arteries, blood letting is the most prompt and efficacious means we posses; and although we cannot employ it to the same extent in this disease as in pneumonia vera, we can nevertheless benefit our patients very much by its judicious employment. We should bleed early in the disease, when there is pain in the chest with difficulty of breathing, and a tense and frequent pulse. The blood should be drawn from a large orifice; we are to be governed as to quantity by the effect produced, letting it run until the activity of the circulation is diminished, and the pain and difficulty of breathing is removed or diminished, and it should be repeated as often as the tension of the pulse and pain return. The blood will generally be cuped and of a buffy appearance on the surface, and the serum of a yellowish colour; this appearance of the blood is considered as a sign of inflamatory action; it is not however alway to be depended

upon; for this appearane of the blood is somtime present when there is no inflamation, and it is sometimes absent when from other symptoms we have no doubt of the existence of inflamatory action. The pulse in not always to be depended upon; for somtimes, in the commencement of the disease, when the heart and large vessels are oppressed with a preternatural quantity of blood, the pulse is weak, and the vital power apparently very much impaired; in such cases we should draw blood very cautiously; if the pulse rise after we have drawn a small portion, we may proceed to abstract still farther; should the pulse become weaker however, from the abstraction of a small portion, we must stop the blood immediately. We are not therefore, to rely upon any one symptom, but we should take into consideration all that present themselves. Although blood letting is one of our most potent remedies in this disease, we are not to expect the same benefit from it alone, as in pneumonia vera; for so long as the liver remains in its morbid condition, and the vitiated secretions are suffered to remain in the stomach and intestines keeping up a constant irritation, blood letting will weaken our patient without subduing in a corresponding degree the action of the

heart and arteries. When the disease is not one of high inflamatory action, and has a tendency soon to assume a typhoid character, we cannot use the lancet to the extent necessary to subdue the local affection; in such cases when general blood letting can be no longer employed, we may bleed locally, by cups and leaches, with advantage. Blisters may be used with advantage, after the activity of the circulation has been subdued; they should not be employed however, so long as there remains any tension in the pulse; but when the disease has a tendency to become typhoid, they may be used with considerable advantage, for their general stimulating influence on the system. Although purgatives are not of very much importance in pneumonia vera, in this form of the disease they can not be dispensed with. In all cases where there is much inflamatory action, they should be premised by venesection, especially when the stomach is very irritable, as they will be then, less liable to be rejected; when this organ is very irritable, calomel from its weight, is not so apt to be rejected as other articles; in this case a purgative composed of several articles of the class, will be more likely to remain than either article seperate.

We should select such cathartics as will evacuate the bowels ~~thoroughly~~ thoroughly; for this purpose, perhaps no remedy will answer better than calomel, given in combination with jalap, or followed in a few hours by the latter article, or a dose of epsom salts or oleum ricini. We employ calomel in this disease, not only for its purgative effect, but also for its influence on the liver; it should be given in large doses, especially when there is much conjestion.

Emetics constitute a remedy of very considerable importance in this disease; they not only furnish us with a means by which we can remove the contents of the stomach directly, but they also influence the circulation to a considerable extent; they promote the secretion of the skin, diminish the pain in the chest, and increase and render more consistent the secretions of the bronchii. Tartrate of antimony and potash is the best emetic we can employ, before the patient is very much debilitated, it diminishes the action of the heart and arteries, and evacuates the stomach pehaps better than any other article we posess. When the patient is too weak to bear the debilitating operation of tartar emetic, we

must employ some other article; we may make use of ipecacuanha in such cases, or perhaps squills, polygala senega, or eupatorium perfoliatum may be employed with advantage.

Expectorants are not of as much advantage as we might suppose, from the relief which is experienced on the occurence of a free expectoration; as they are generally of a stimulating nature, they are productive of harm so long as there exists much fever; but after the action of the heart and arteries has been reduced, they may perhaps in some instances be employed with advantage; in cases of debility attended with difficult expectoration, an infusion of seneka, or the syrup of squills, or some other article of the class, may prove beneficial.

Diaphoretics may sometimes be used with advantage; when the skin is hot and dry, small doses of tartar emetic, or a powder composed of nitrate of potash and tartar emetic, may be employed with advantage; the more stimulating diaphoretics may be used when the patient is very low.

Opium, in any form, is injurious in the commencement of the disease, and so long as there remains any febrile

action; but when the disease has continued for several days, and the fever has been subdued, and there still remains a troublesome cough with little expectoration, which seems to depend upon an irritable condition of the mucus membrane of the bronchii, a few grains of dover's powder may be given with advantage. When the pulmonary inflamation terminates in suppuration, the chance for recovery is considerably diminished; we are not however to abandon our patient under these circumstances, but whenever we are certain of the existence of pus in the thorax, either from its pointing externally, or from the signs which characterize its existence in the cavity of the pleura; we should let it out by an operation.

In cases of hepatization, external iritants are recommended; tartar emetic ointment, tincture of cantharides &c may be used for this purpose; ifsues and setons are also recommended. Internally, small doses of some mercurial preparation have been recommended; some of the narcotics have also been advised, as conium maculatum and atropa belladonna.

An Inaugural Essay
on the principles of Luxations
to be submitted to the consideration
of the
Provost Trustees and
and
Medical Faculty
of the
University of Maryland
for the
Degree of M. D.
By
Philip Nelson Norris
of
Rosemont
Fredrick County
Virginia

March 1832

To the
Honorable William W. McKim
of Baltimore
and
Nathan R. Smith
Profr. of Surgery in the U. Md
This dissertation
on the principles of Luxations
is with much respect
for
Their characters and talents —
Obligation for their Kindness
And
Thanks for their friendship —
Dedicated
By
their friend
the Author

March 1832 —

Dislocations

In writing a dissertation, on any subject "with which he is only acquainted
from the detail of others, without the aid of personal experience" governed
only by general principles, which of themselves, are not infallible - the
medical student is apt to have his course impeded, by almost
insuperable obstacles, arising from the variety of circumstances in
connection, with the same subject - some of which may antagonize each
other, and others again, whose whole force and application depend
on a detail of minutiæ, a facility, in the discovery and description
of which, can only be acquired, by the tact of experience and practice,

He frequently has objects of a more delicate nature, to
surmount, that of deciding for himself, between the extremes of opinion
which are sometimes promulgated, by men, equally to be respected and
venerated for talent, observation, and experience - here the strait is
narrow, and bounded by points, upon frowardness, and effrontery
least stricke, but through, which he may adventure, with every
probability of success, with reason and modesty as his guide.

And in choosing a subject for my Thesis, I have had
particular reference, to these circumstances - in my choice I have
taken the precaution, to select one, on the general principles of
which, no difference of opinion does exist; and so far as anat
-omy bears us out, none can exist - What I have to say
shall be the opinions of the best Surgeons, sometimes in their
own language, sometimes in my own.

The term dislocation, or luxation is
used in Surgery, to express the escape of the articulating surface
of one bone from that of another - or from a cavity in another bone

appropriated to it, as the head of the thigh bone, from the acetab

There are some bones, which in consequence of the structure of their joints, and their great exposure to violence, more frequently luxated, — as the Humeri at the shoulder joint and the Femur; others from opposite circumstances, are very rarely dislocated, as the Vertebra, — And it may be mark.d as general rule, that the liability to dislocation, is in proportion to the degree of motion, which the joint shall possess; and hence the Ball & Socket which admits of all motion, is the seat of dislocation frequently.

In the Hinge like or Ginglimoid articulation, the accident is rare, in consequence of the limited motion, allowed it; the breadth of the surfaces of the bones and the number, strength, and peculiar arrangement of the ligaments, of the articulation — and they are also less frequently exposed to force, in a direction, proper for luxating them.

Luxations, are said to be complete, when the bones are entirely seperated, from each other — they are incomplete, some portion of the bones at their articulating surfaces, remain contact — We seldom find, an incomplete luxation, in any other than Ginglimoid joints — as the Knee, Elbow, or foot, for very reasons, as may be seen by reference, to the construction of these parts. — To be capable of reducing a dislocated, bone to its proper situation, it is necessary, that we possess an accurate knowledge of the parts, concerned, in forming joints, and of the effects of the different muscles, acting upon the displaced bones

which knowledge can only be obtained, by frequent inspection of the fresh joints, covered with cartilage, and enveloped with ligaments &c.

The longer a bone remains out of its proper place, the greater difficulty will we experience, in our attempts to reduce it — the muscles, and soft parts, having accommodated themselves to the dislocation of the bone, — after a longer time, adhesions, and even in some cases, concretions take place, and form an artificial joint and circumstances, such as these, render it advisable, that we should endeavour to reduce the bone, to its proper place, as soon as possible

Dislocations, like fractures, have been divided, into Simple and Compound — The simple, being accompanied, with no external wound — The Compound, has a wound, communicating, with the cavity of the joint; formed either by the protrusion of the bone itself, or by the cause of the luxation, dividing the integuments at the time of injury — These displacements of the bones may be, and frequently are, complicated with wounds of the Tendons, Nerves, and Bloodvessels — these, are generally more troublesome to the practitioner, and are not unfrequently fatal to the patient.

The immediate causes, of the dislocation of bones, is, the application of force to joints, and the action of the muscles, In the enarthrosis joint, "Boyer" says, that, it is impossible to luxate them, without applying the force obliquely to the articulation — and he has exemplified, this maxim, in the case of the Humerus, at the Shoulder joint.

He says, if the bone, hang parallel, with the body, or be placed at right angle, with regard to it, that it is perpendicular, with

Lat. est.

respect, to the glenoid cavity of the scapula, no force is capab
of luxating it — If a person falls on the elbow, while the
forearm is in this position, the head of the bone, will be forc
against the cavity, formed for its reception — but if the arm
be removed, from the body, the axis of the os humeri, will fa
obliquely, on the surface, of the glenoid cavity, which will
favor its falling out of the socket; and this disposition
be increased, in proportion, as the angle formed by the axis
of the bone, with the surface, of the cavity, deviates from a
right angle — The action of muscles, mutually assists i
dislocating bones, sometimes no other cause, can be said to ex
the patella, has been dislocated laterally, in dancing, and dur
violent convulsions, different bones, have been occasionally dis
-lod. Some joints from a Parallesis of the mus
surrounding them — or from a preternatural laxity of their
ligamentous bands, are in a state of constant predisposi
to luxation, and are displaced by the most trivial cau
they are however, from the same relaxation which gives ri
to them, very readily reduced — unless this process, be too lo
delayed — Cases have existed, in which the patient c
not yawn, without dislocating the Jaw, and Proff Dorsey
he knew a woman, who could not use her arm, from their great d
to dislocation at the shoulder.

Whatever may be the cause, or manne
which a luxation is produced, it is always accompanied, mo
or less laceration of the ligaments, surrounding the joints; and
round articulations, as of the hip and shoulder, the fibrous c

always torn — except in cases of extreme relaxation of the
ligamentous envelope of the articulation — such as noticed in the
last paragraph.

Symptoms

In the subject of Symptoms, little can be said in a Thesis, which
treats of luxations, only on general principles; rules laid down in
regard to the diagnosis, and prognosis, of dislocation, generally would be
useless, and any attempt to render these same rules, applicable
to particular dislocations, would be unscientific and pernicious —
It can only be by studying the anatomy, of each particular joint
of the body; the relations of the various compound parts to each
other, observing what phenomena might ensue, upon the displace-
ment of a bone, in certain positions — consequent upon the com-
pression of the nerves or blood vessels of the part — the laceration
of ligaments, or tendons enveloping, contiguous to the injury —
By noting the relative situation of the muscles of the parts,
arising from, or inserted into the dislocated bone (and this should
be done with great care, and with particular care to minutiæ)
we see too, how dislocations, in certain positions affect these
muscles, which are put upon the stretch; and which are caused
to contract, by an approximation, of the points of their origin
and insertion — Upon a knowledge of these depends, the last
and science, we may use in effecting a reduction of the bones,
to their proper situation. — Nor is this all, that is necessary to be
done in study, of this subject, we should examine the joints, in their
proper situation; covered with all their ligaments, skin, &c — be familiar
with its external appearance; and the various points, and their

relations; so that any deviations from the proper shape, may be detected at a glance — The diagnostick marks, of inflamation chiefly consist of circumstances, arising from the interruption of the function of the affected part — and the lodgement of the head, of the dislocated bone, in an unnatural situation, and the parts, which it compresses, and renders painful — there is more or less loss of motion in the part — the limb or part is shortened or lengthened — distorted to one side, or the other, according to the kind of dislocation; the pain in the part is much increased, from changing the position of the limb — upon being moved by the hand of a surgeon. The head of the bone may sometimes, be distinctly felt, forming a tumour or preternatural projection, while in the situation of the articular cavity — there is an unusual depression, or want of fullness in appearance, but as I said before, an explicit account of symptoms can only be given, in a detail of each particular luxation.

The treatment of dislocations, consist in replacing the bones and retaining them in their proper situation; though there is a great difficulty in keeping the bones, in their natural position, when they have once regained it — We must effect the reduction of bones, by extension, and counter-extension — for the purpose of applying extension, and counter-extension a variety of apparatus, has been invented. — although surgeons now, generally make use of, the hands of assistants only — occasionally, the compound pulley — The hands of assistants, should always be made use of, when practicable, as we are always able to change the direction of the force by a word, which

must be done, when machinery is used — of course the parts and direction, in which, the force should be applied, to effect the reduction of a dislocation; is referable to particular dislocations — We have however some general rules, which it would be proper to attend to — In most cases, force, should be made to act directly, as possible, upon the affected joint — our extending force, should be applied, to the dislocated limb — Counterextension should be made, from those parts, to which it is articulated — Mr. Pott, and most of British, and American Surgeons, advocate this method. Boyer, and the generality of French writers, direct on the contrary, that "the extending force, should be applied, not on the luxated bone, but on that with which it is articulated, and as far as possible from it — A rule, which can be applied with advantage, to very few cases — The principal obstacle to the replacement of a bone, is the action of the muscles, drawing its articulating surface, into a situation remote, from that, which it ought to occupy. — It frequently happens, that the head of the bone, glides over certain bony prominences, and then takes a situation, in a depression of bone, from which it must be forcibly passed, before its reduction can be effected. —

Instances, of these bony resistances, are found in the luxations of the thigh bone — The head of the Femur passing over the high margin, of the acetabulum, lodges in the foramen Thyroideum, or on the Dorsum Ilii; and before it can be placed in its socket — it must re-ascend the prominency over which it had glided — The degree of force to be employed

can only be estimated by the effect — it should always be suffi
to accomplish the end — although it is constantly to be recollec
that force alone is not to be relied on; but that skill in th
direction of it should always be exerted — A force sufficient
tear off a limb, has been applied, without effecting a redu
of the bone. — The direction of the extending powers, and th
degree of their violence, will be regulated, by the science an
Judgment of the Physician.

Force should in all instances, be gradually applied
"Mr Pott" says, that the lesser degree, should be applied
and increased gradation — and this rule is carefully observed
will prevent mischief, from the use, of the force necessary co
in the most chronic luxations — When we shall requi
the assistance of a number of persons, to reduce a luxatio
we should place next the skin, a piece of Buck skin, or
leather, to prevent excoriation of the limb; and then we may
make extension, by means of girths, napkins, or strong fl
bands, of any kind, fastened upon the limb; by means of tow
made of cotton cloth — in this manner we may command an
requisite assistance. — Counter-extension applied to th
bone, with which the luxated one, was articulated, sh
be made at least equal, to the extension — Counter exte
may often be made, by means of bands, secured to staple
a wall, or some secure position. — When we find a luxa
bone, difficult to reduce, we should change the postur
the patient — after an erect posture, has been tried ineff
-ually, we should then direct the recumbent one, and if th

should fail, we may frequently succeed, by placing the patient in a
chair.

Sir Astley Cooper, has taught us, that great advantage, may be
saved in our attempts, at the reduction of a bone, by attending to the
patients mind; those muscles, that oppose, the efforts of the surgeon,
by acting, in obedience to the will, may have their action suspended
by directing the mind to other muscles — he says he was called to a
patient, with his right arm dislocated, which had resisted the
various attempts, which had been made, by a surgeon, at reduction,
he sat down on the bed by the side of the patient; he placed his
knee in the axilla, and made extension, at the wrist — the
dislocated bone, remained unmoved — he said rise from your bed
gentlemen; the patient made, an effort to do so, while the force of
extension, was steadily kept up, and the bone suddenly snapt
into the socket. —— When the muscles are unprepared, we
may succeed, by a slight effort, when violent measures have
failed. The fatigue of the muscles, occasioned by long continued
efforts at reduction, often produces a relaxation of the muscles,
which permits the bone to return, to its natural position —

Dr. Physick many years ago, made use of copious
blood letting, with this view — he bled the patient ad deliquium
animi during its continuance, while all muscular action, was suspended,
the reduction, was readily accomplished. This practice has
been recommended, by several writers, but particularly by Dr. A
Severino Sevr., who spoke of it, in his lectures; But Dr. Physick,
appears the first, who had boldness enough, to carry it, into full
operation — he has used it frequently, both in his private and

hospital practice; he has frequently found, that during a stat
syncope, the hands of the operator alone, were sufficient, to ef
what had resisted the greatest force.

In cases, where blood letting, to the necessary extent is ina
-able, from great emaciation, dropsy &c other means of dim
-ending the action of the muscles, should be resorted to. — Ener
the tobacco glister; and even nauseating doses of antimony, that
be used, with great advantage — this last may be commen
by directing, the patient, to hold a solution of antimony in
mouth until nausea is produced —. Intoxication has bee
very highly recommended, — it was resorted to by Dr. Physick
with complete success, in a patient who was dropsical, and
whom blood letting would have probably destroyd.

The warm bath too, by virtue of its relaxing power, is
might be rendered useful, in reducing, dislocations — in cases
where the remedy is not contraindicated — this has been recom
-ed by Astly Cooper and Mr. Travers. — The effects of
letting ad deliquium Animi, in facilitating the reduction
dislocated bones, has been very strikingly shown, in seve
Chronic luxations, which have occurd to Surgeons, in dif
-rent parts of this country. — Dr Physick, effected
reduction, of a case of luxated Femurs of 45 days sta
with great facility; and Dr Colin McKenzie of Baltimo
by means of the same remedy, effected the replacement of
dislocated shoulder, of 6 months duration; and it is worthy of
remark, in this case, that neither swelling nor inflamation succe
the reduction, and the poor sailor, was dismiss from the

perfectly well, in the course of two weeks. — An erect posture, should be preferd as being most favourable, to the production of Syncope, the full effect may be produced, with a loss of half the quantity of blood. — At what period, after its luxation, should we consider it, impracticable, and improper, to attempt the reduction of luxated bone? P. Pell and others of the last century, say, that after the lapse of a week, or fortnight, all efforts may be considerd, as hopeless; experience teaches us, that this is, a hurtful limitation of time.

"Desault" has succeeded, in reducing luxations, three months, standing; Dr. Physick of two and three months, and Dr. McKenzie, of six months duration — "If force applied to remove a bone from its natural, to an unnatural situation, it may not force, be so directed, as to remove it from its new to its former position;" if the time could be ascertaind, at which the socket is filled up, and the texture of the parts, completely changed; then and then only, should we give up all hope, of a reduction. In all our efforts perseverance, is an important rule — if our first attempts fail, we should vary, and repeat them; and though, we may not be completely successfull, something at least, may be gaind; if the head of the bone, be brought, nearer, to its natural situation — for the motions of the bones, will be freer, in proportion, as we place it, in the sphere of action of the muscles. — after a bone has been dislocated, for a length of time, it forms adhesions, in its new situation — present in the capsule, contracts, or heals up — immense changes are produced, in the structure of the parts, by inflamation, which

increase, the difficulty of reduction greatly. — But still we m
succeed — rotating the bone, and moving the joint in every di
frequently breaks up these adhesions, and we effect a red
considered, as hopeless. — Perseverance, is strongly recommend
although, we should be cautious of the danger, of carrying o
efforts, to too great lengths, to reduce Chronic luxations

A case occurd to Dr Gibson, of dislocated os humer
eight weeks standing — he effected, the reduction, in thirty
-utes, by the usual means, in presence, of the students of
"Phil^a Alms House"; in the evening of the same day, the
died; upon dissection, a quantity of blood, was found eff
in the surrounding parts — upon removing the Coagula,
axillary artery, was found ruptured — adhesion, had form
between it, and the Capsule; making this event inevitab
but impossible to forese.

The socket of a joint, that has been luxated, som
fills up, with a thickening of ligamentous matter, and th
usual matter of adhesions — and in case of long stand
the Cavity, has been found obliterated, with bony matter;
in other cases, it remains little changed, in structure —

The muscles of a limb permanently dislocated, the
and loose their strength; but in some cases, a power
motion, is regained, after a time; yet it is limited, and o
imperfect. — After the reduction of a bone, inflammatory
-ptoms may appear, which should be combatted, with th
usual remedies; the stiffness of a joint which follows
reduction of it, is not generally, of long continuance — th

should be gently moved, after a few days have elapsed; and these motions, should be gradually increased.

The remarks, which have been made, apply equally, to simple complete, luxations, and to simple incomplete. — The incomplete dislocations, for the most part are to be seen, only in the Ginglimus joints; and the difficulties and danger, attending these luxations, depend not so much upon the removal, of the articulating surfaces from each other, and putting them, in constrained and unnatural positions; as they do on the injury done the soft parts, and even the heads of the bones, in some instances, by the action of the force or heavy implements, by which the accident may be produced.

These accidents assimilate more, the nature, of compound dislocations (of which we speak hereafter) than simple; their reduction, is generally easily effected; and our attention, is principally occupied, in preventing, the sequelae of such an occurrence; which have frequently, even in skillful hands, caused the death of the patient — but we will speak more particularly of this, when on Compound dislocations.

In almost all, dislocations, in which we make extension and Counter extension, to effect a reduction, the bone is pulled to its socket, by the action of the muscles — as in shoulder, except in cases of syncope.

"Compound dislocations," have always been considered, as among, the most fatal accidents, to which the bones, could be subjected; so much so indeed, that they have been placed by some among the opprobria Medicorum. — But this is an exaggeration,

for which we can find no excuse, in the present highly improved state of practical surgery. 'Tis true, we have all the dangers of wounded joints, and compound fractures, to dread from them; but we should pause, before we finally consider, the question of amputation, which is attended, with most of the difficulties of wounded joints. On this subject, we can lay down no general rules — the judgment of the practitioner alone, must decide the question; the injury done the Bloodvessels and nerves, the season of the year, and the state of the patients constitution, are the only rules, by which he can be governed, in his decision. —

If the weather be warm, and the patient much debilitated, by disease; or very much accustomed to the use of intoxicating liquors — or be a high livier — the prognosis, is unfavourable, to the salvation of the limb, and even to that of the patient, if the joint affected be one of comparative magnitude. And next in regard to the extent of the injury, a simple opening into the cavity of the joint, with a laceration of the ligaments, and displacement of the head of the bone, from its fellow, without any injury being done to the vessels, and nerves, is not a necessarily fatal accident; and should not (the circumstances stated in the preceding paragraph being considered) cause us to resort to amputation. If the vein and nerve, which are distributed to the extremity of the member, are injured, or torn — the case is plain — amputation must be performed; and that too as soon, as the system shall reach, after the accident; but if the artery alone, be ruptured, or violently contused, in its

the articulation; an attempt should be made, in every case to save
the member. But the propriety of this practice, is not by any means
the moot point with myself; for we are all aware, that the
anastamosis of vessels, is so free, that we can find a collateral
circulation, in any part of the body; and in no part of the system
do we find such abundant provision, to be made by nature, for
carrying on the circulation, to the extremity of a member, after
the obliteration of the main artery — as, we are in the neighbo
hood of the articulations ——

That amputations should
have been so generally performed by the Older Surgeons, is not to
be wondered at — when we reflect on the cumbrous
apparatus used by them in the treatment of cases of a
similar nature — And also when we recollect that they
were either ignorant of or afraid to trust to the
reparative efforts of nature —— But in our day the
apparatus for the support of fractured limbs and wounded
parts.. has attained to such a degree of perfection — as in some
measure to obviate the secondary injuries
resulting from being continued pressure.. and the fatigue of a
continued position — for this purpose we have in cases of
fractures of any of the joints of the lower extremeties.. Smith's
Suspensory Splint.. and in arm cases
the angular Splint —— both of either of which are
much better calculated to obviate the injurious effects
of pressure.. than any of those described by authors ——

Although we may save the life and limb of the patient

yet we cannot entirely obliterate the effects of the injury

Anchilosis is the most common termination of this kind of injury — though cases frequently occur which terminate in the almost complete restoration of the functions of the joint — Cases of which kind are mentioned by Abernethy and other modern surgeons — And this was the result of a case which came under my own observation under the care of Dr Fowler The history of which I have in my possession at this time —

Much more might be said on this subject — but I deem what has been said sufficient for the purposes of this

Dissertation —

March 1822

An
Inaugural Dissertation
on the
Decarbonization of the Blood
Submitted
to the Consideration
of the
Provost, Trustees,
and
Medical Faculty,
of the
University of Maryland,
By
Mo. H. Skinner,
of
Prince George's County
Md.
Member of the
Baltimore Medical Society

Baltimore 6th March
1832

An

Inaugural Dissertation

on the

Regulation of the Blood

Submitted

to the Examination

of the

Board of Trustees

and

Medical Faculty

of the

University of Maryland.

By

Wm. H. Wanner.

of

Franklin County

Pa.

Member of the

Baltimore Medical Society.

Baltimore 1842 March

1842

To Turner Wootton M.D.

Dr Sir

Under your guidance have I prosecuted my medical studies. From your example. imbibed a taste for medical research, and to your friendly instructions, and I principally indebted for the little practical Knowledge I possess. To you therefore permit me to inscribe this essay as a testimony of my respect for your talents, and professional attainments. Believe me. My Dear Sir. this opportunity of publicly expressing my gratitude for your Kindness. is a source of much pride. and pleasure to your Friend and pupil

The Author

When the blood of the Pulmonary Artery is submitted to the action of atmospheric air during its circulation through the Lungs, we observe important changes obtaining in each of these fluids. It shall be my endeavour in this essay to point out, in what these changes consist, and in what manner they are produced.

Previous to this investigation, it may not be amiss to premise a short anatomical description of the organs in which these phenomena are going on, such a one at least as will enable us to understand in what manner, the air which we inhale, and the blood of the Pulmonary artery, are made to approximate each other.

The Lungs present to us the appearance of two irregular cones, the summit, of each of which is placed beneath the clavicle, and the base resting upon the diaphragm, a place being contrived on the left side of the thorax, for the lodgment of the heart, the lobe on this side is smaller than that on the right. These lobes are atta-

ched to the Trachea, a Fibro-cartilaginous and membranous tube; communicating superiorly with the larynx and divided inferiorly into two large branches called bronchi, each of these bronchi pass to the lungs, one into the right, and the other into the left lobe; where they soon divide and subdivide in a remarkable manner, forming small delicate canals, which ramify all ove the lungs and terminate at last in small membranous cavities, which have received the appellation of Bronchial vesicles. In this manner is formed what has been compared by M. Bichais, to a tree every part of which is hollow and has been called by him the "trachea-Bronchial-Tree". By means of this tree and its branches, the air during the act of respiration, is permitted to permeate every part of the lungs, and is thus enabled to approach the blood of the pulmonary arteries, which is conveyed to the lungs in the following manner. the pulmonary artery after leaving the right side of the heart, soon divides into numerous branches, which traversing the parinchyma of the lungs, in every direction, and winding themselves, around the bronch-

ical tubes, finally send a small radicle to each of the bronchial vesicles where they terminate; some directly into the corresponding capilaries of the pulmonary veins, while a large proportion; pour their blood directly into the cellular membrane where, after being submitted to the action of the atmospheric air and experiencing those changes it is destined to undergo it is again pumped up by the radicles of the pulmonary veins, and conveyed to the left side of the heart again to go the round of the aortic circulation.

To chemistry we are indebted for all our knowledge respecting the aeration of the blood, we see it brought to the lungs of a dark modena colour, exhausted in a considerable degree of its vital power, and rendered unfit to supply the wants of that system it is destined to support. Yet no sooner has it come in contact with the atmospheric air, than it acquires properties altogether new! its elaboration is perfect, it is more disposed to coagulate; its oder is stronger, and its dead purple hue

exchanged for one of a bright vermillion red. The air which was contained in the lungs during this time, has also undergone some important changes we now expire. oxygen, carbonic acid, and azote, were as we know the pure atmospheric air taken into the lungs, consisted of oxygen and nitrogen alone. What has the blood here lost? what has the air gained? and how these wonderful changes have been accomplished? are questions which have engaged the attention of the Physiological world in all ages, and were as much the study of the grecian schools. as of those of more modern date - and even at the present time, are still veiled in considerable darkness and obscurity. although they have successively engaged the attention of a Black, a Priestly, a Scheele, a Seguin - a Crawford a Davy, an Ellis, an Allen & Pepis, an Edwards, and many others whose names might be mentioned.

Dr Black was (I believe) the first to notice the difference between the air

of expiration, and that of inspiration. He found that the air expelled from the lungs, during the act of expiration, has acquired a considerable quantity of carbonic acid - which may be detected by its transmission through lime water.

This discovery directed the attention of Priestly, to the investigation of the subject. He observing that air was rendered unfit for supporting combustion, by the process of Respiration naturally concluded that oxygen was consumed. And Lavoisier not long afterwards - established the fact, that oxygen disappears and carbonic acid supplies its place.

Chemists began now to enquire, whether the nitrogen of inspired air, underwent any changes during its passage through the lungs. Many experiments were entered into, for the purpose, if possible, to determine this point. Various however were the results of these experiments, according to Priestly, Davy, Humbolt, Henderson, and Sloff, there appeared to

be an absorption of nitrogen, a less quantity of that Gas being exhaled, than was inspired. Very different, however, were the results obtained by Nysten, Barthelet, and Despretz; they remarked an increase in the bulk of nitrogen, and from the experiments of Seguin and Lavoisier, Vauquelen, Ellis, Dalton and Spallanzany, it was infered that there is neither absorption nor exhilation of nitrogen, the quantity of this Gas undergoing no change, during its passage through the air cells of the lungs, and on the authority of Messrs Allen and Pepis, who came to the same conclusion with the last named gentlemen, the pretty well obtained amongst chemists, the nitrogen of atmospheric air during respiration remains altogether passive.

The novel and very satisfactory experiments of Edwards, have however, lately called in question, the correctness of this opinion. This acute Physiologist and Chemist, seems to have reconciled the discordant results of former

experiments by showing incontestibly that during respiration, the nitrogen may at one time be increased, and at another be diminished while at a third it will remain, wholely unchanged, according to the season of the year — the kind of food on which the animal is fed, or according to the nature of the animal itself. He accounts for the phenomena by supposing that there is always going on in the lungs entirely different from each oth namely absorption and exhilation — which are liable to be interrupted by each and every of the causes above enumerated — when these two processes are perfectly balanced there is no change produced in the quantity of nitrogen, But when one predominates, so will there be either increase or diminution in the quantity of nitrogen expired.

Two theories have been proposed to account for the formation of the carbonic acid found to exist in respired air. According to the first this Gas is actually formed

in the lungs themselves, while according to the latter it supposed to exist already formed in the venous blood, and is only thrown off from this fluid during its circulation through the lungs. The former of these theories has however received several modifications. Dr Priestly (with whom this theory originated) believed these Phenomena to depend upon the disengagement of Phlogiston from the blood, and its subsequent combination with air. Dr Crawford was of opinion that venous blood contains a certain principal called Hydro-Carbon (a compound of Hydrogen and carbon), that this Hydro-Carbon was decomposed in the lungs, its carbon uniting with a portion of the oxygen of the air formed carbonic acid, while its Hydrogen united with an other portion of oxygen to form water which was thrown off from the lungs in form of vapour.

This Hypothesis was opposed by Messrs Allen and Pepis, not only because the Doct. was unable to prove the existance of his supposed Hydro-Carbon, but because it was

found to be inconsistant with the leading fact established by these chemists, From their elaborate researches, they found that the quantity of carbonic acid evolved, exactly corresponds with the loss of oxygen sustained by the atmospheric air. They, therefore, come to the conclusion, that during respiration, the whole of the oxygen that disappears, has combined immediately with the carbon of the venous blood to form carbonic acid, and that the aqueous vapour expired is nothing more than an exhilation from the smale pulmonay vessels.

This theory was afterward modified by Mr Ellis, this chemist not being able to see in what manner the oxygen is made to act upon the carbon of the blood, through the animal membrane in which it is confined, explained the process by supposeing that the carbon is separated from the venous blood by a secretary process, performed by the lungs themselves, and that the oxygen then combines with it, to form the carbonic acid.

If this be the case respiration does not ~~also~~ contribute to the decarbonization of the blood the oxygen of the atmosphere serving merely to convey away the carbon after it has been thrown off from the blood and is floating loosely in the pulmonary vesicles.

The second theory to which we have alluded is that which has been supported by Lagrange, Hassenfratz, and lately by Dr Edwards and some others. According to this Hypothesis, the carbonic acid is generated in the system, and thrown off from the blood when it has reached the pulmonary circulation.

The supporters of this doctrine believe that the oxygen is taken into the circulation in its gaseous form, that it attacks the carbon of the blood wherever met with to form carbonic-acid Gas, that this gas after going the round of the circulation as we have before seen, finds a ready outlet through the pulmonary membrane - thus -

giving rise to those characteristic marks by which we are enabled to distinguish veinous from arterial blood.

This latter theory, although heretofore thought less probable than the other, is I think supported by very powerful and almost irresistible arguments. I am well aware it is not the one taught in this school, nor indeed is it the one which a short time since I had adopted for myself. I felt disposed to reject it because its supporters had never attempted to explain by what force the oxygen of the atmosphere is made to penetrate the animal membrane interposed between it, and the blood, in order to enter the circulation. It had long been observed that Gases, may be made to penetrate animal membranes, if sufficent pressure be used for this purpose, but in the act of respiration I conceive, there is not "vis a tergo" sufficent to produce this effect. Since however, the discoveries. By M. Dutrochet of the laws of the

Endosmos and Exosmos of fluids, has cleared up this difficulty in a manner so satisfactory, I think the evidence of argument is decidedly in favour of the opinion that oxygen does enter the circulation.

The experiments of Edwards seem to leave no doubt that the blood during its circulation through the lungs is capable of absorbing oxygen, Hydrogen, and nitrogen, and of Emitting nitrogen, and he has gone far to prove that carbonic acid is derived from the same source. On confining small animals in an atmosphere of Hydrogen Gas, he assures us he found the residual air to contain a quantity of carbonic acid, and in many instances, in a quantity larger than the bulk of the animal itself. Now these, as well as some other Phenomena which the advocates of the other theory have never attempted to explain, are rendered not only inteligible but simple, by the doctrine Endosmos and Exosmos. by it we are enabled to see

count for many phenomena which by any other hypothesis are altogether inexplicable — by it we can readily answer for the evolution of carbonic acid from the surface of the body, for the extrication of Gases from old ulcers, denuded surfaces, &c — and for the appearance of Gaseous particles in all the different tissues which compose the animal frame.

It results from the experiments of Graham, Faust, Togno, and Mitchel, that when two Gases are separated by a membrane, both of them pass through the partition; but as one of these motions predominates over the other the result is Endosmos or Exosmos. If a bladder be partially filled with common air, and suspended in a vessel containing Carbonic acid; after a short time considerable Endosmos will have taken place; the carbonic acid having entered the bladder so as to produce distention, in many instances even to bursting. the same results will be obtained if the gas contained in the bladder be Hydrogen or some

of its compounds; But if these experiments be reversed then we shall have an Exosmose the bladder becomeing flaccid from the loss of the carbonic acid it contained. It is also proven, that when blood and oxygen gas are similarly separated, a current will be established from the oxygen towards the blood, and if it be veinous blood carbonic acid will be formed, Indeed, the presence of carbonic acid in veinous blood, is sufficiently manifest from the experiment related to us by Dr Faust, This experiment consisted in filling a bladder with veinous blood, which after being wiped with a dry cloth, he placed in the bottom of a large jar. he then placed upon the bladder a small pot half full of lime water, and the externae air was carefully excluded by covering the mouth of the jar. On examination forty minutes afterwards, a pelicle of the carbonate of lime had formed upon the surface of the lime water, which being broken, was suffered to precipitate, thus

in the course of a few hours, several such pellicles being broken, were again speedily renewed. In this experiment he assures us the formation of the carbonate of lime, was beyond all comparison, more rapid than in an other jar of lime water exposed in the open air.

Although the absence of precise data, prevents the establishment of one Hypothesis in preference to another. Still I feel myself bound in conclusion to adopt that theory of Endosmos and Exosmos as the one by which we are enabled to account for the various phenomena attending the decarbonization of the blood, in the most simple and satisfactory manner.

An
Inaugural Dissertation
on
Yellow Fever
Submitted to the Provost, Trustees
and Medical Faculty
in the
University of Maryland
For the Degree of
M. D.
By
John C. Polk of Baltimore
Session 1831-2

In taking Yellow fever for my subject the first question which presents itself is, wheather it is contageous; I do not beleive it is ever in any form contageous. having been myself in such situations. where. I must inevitably have had it; if it could be propigated in that way. I am aware that a number of respectable writers are of a different opinion, some of whome adduce examples, of the fever breaking out in ships from one of the crew being infected; without for a moment considering that the others might have been exposed to the same cause, but say they the infected person was the only one who had been on shore, the others never left the ship, they could not have been exposed to the same cause. I do not conceive it necpary for them to go on shore, the miasma may be produced on board. It has been aserted that the fever was carried to Gibraltar from some sickly port, and that it must have been carried there because the disease had never been known there before. now this is no proof that the miasm did not orrigionate on board the vessel in this instance, nor indeed although

it might never have been known there before, is it at all improbable that it might have originated on shore, this I think is the more likely when we consider that although, the fever might never have been there before, it has been very prevalent since, without having ships to put it on, From Bancroft's discription of Gibraltar, I am inclined to think that the fever never having been known there before, must be a mistake, and also from what Heberden says in his commentaries on the diseases incident to that place, it is evident that the fever has been prevalent there, as long as it has been in possession of the British. It has been said that the diseas which we had in our own city, might be traced to vessels coming from the West Indies, so it may without such vessel having a single sick person on board that is more likely to produce miasma than the great quantity of fruit brought in those vessels; too often in a state of decomposition, nor would it be wonderful if the crew of that vessel should be sick, but it is well known that our streets were very dirty at that time, so that even putting the fruit out of the question, we had cause enough

among ourselves, The disease at that time was confined to the low dirty streets of the point and wharves, and if now and then a case was found, about the high, airy parts, it could always be traced to the lower end of the town, what better proof is wanting? if the disease were contagious would it not have spread through the whole town? Dr. Tal Lind in his Essay on diseases of hot climates, mentions the case of the Phœnix ship of war, which on its return twice from the coast of Guinea touched at St. Thomas: the first time out of a number of persons who slept on shore, all had the fever and only three escaped with life, the second time out of ten men who slept on shore eight died no other person at either time on board was affected, although their communication with the sick was neare enough to have affected the whole crew had it been contagious, It is useless to quote any more cases these few are sufficient to convince any unprejudiced mind, that the fever is not only not contagious, but that it is produced by marsh miasma, Let us now having ascertained the exciting cause, examine

those which predispose to it. ~~I have been told~~. you will often be told in the west Indies that you must keep above fever heat that is you must drink liquor enough to feel the effects of it continually, so much as to keep the pulse in a constant state of excitement; but examine the effects of this practice carefully and you will find. there the very men who are most subject to this fever, and who when they have it are in most danger from its ravages, they will have it a great deal worse than the man who drinks nothing but water, and eats moderately, drink in any quantity I feel confidence in asserting is one of the most frequent predisposing causes. and I am supported in this assertion by Johnson in his history of the diseases of warm climates, if a man in a warm climate excites himself by drink in the morning and takes a bottle after dinner. he awakes depressed and languid both in body and mind. a little more drink brings him again into a state of excitement. it is now bed time. he sleeps and in the morning awakes with the same or increased languor now

it must be evident, to even the most superficial observer, that this alternate state of excitement and depression, must predispose a man to the influence of marsh miasma Over eating causes the same depression after the first exhilirating effects have worn off These then may be considered as two of the predisposing causes of yellow fever, over exertion in the pursuit of pleasure or business anxiety of mind, any thing which depresses the spirits such as. fear, horror, remorse or disappointment, in love. or other passion venery, for which unfortunately there are too many and easy facilities, exposure to all vicissitudes of weather, wearing wet clothes sleeping in the night air and exposure to the dew, giving way to sunden and violent bursts of anger, excessive evacuations, want of a sufficient quantity of food, these are the most prominent predisposing causes to the influence of Marsh miasma, and in proportion as we are free from these so are we protected from the masma. I will here make a short quotation from Dr. Rush's outlines of the phenomina of fever which though it is intended to apply to fevers in general

may nevertheless be equally applicable to the fever under consideration. "In health there is a constant and just proportion between the degrees of excitement and excitability, and the force of stimuli. But this is not the case in the predisposition to fever. The ratio between the action of stimuli and excitement and excitability is destroyed; and hence the former act upon the latter with a force which produces irregular action. When a body is debilitated and its excitability increased either by fear, darkness or silence, a sudden noise occasions a short convulsion, we awake in like manner in a light convulsion from the sudden opening of a door, or from the sprinkling a few drops of water in the face, after the excitability of the system has accumulated by a night's sleep. In a word, it seems to be a law of the system; that stimulus in an overproportion to excitability, either produces convulsions, or goes so far beyond it, as to destroy motion allogether ~~in death~~." The truth of this position being admitted we must agree with Hunter in his assertion, that there is but one exciting ~~cause~~

cause in fever and that is stimuli, all the above remote causes may therefore be considered as predisposing to fever, by there power of debilitating the system and thus render it more liable to be acted upon by marsh miasma

I must now say a few words on the manner in which marsh miasma acts on the system and what organs it particularly affects The liver appears to be the organ particularly affected in this disease; but through what medium, is the influence of the miasma conveyed? Is it after being inhaled absorbed by the bloodvessels? this does not so well account for the liver being affected, and as I believe it is I cannot adopt this opinion, Is it then on the nerves which it acts? if so is it the nerves of the stomach or of the lungs and fauces? the former I hardly think it can be, for there are but two ways it can be conveyed the first is by being swallowed with the food, now when we eat we are generally in our houses and not exposed to the influence of miasma; consequently very little could get in this way, next it might be

swallowed with the saliva, if so tobacco chewers ought to be particularly guarded against its influence; this is however not the case, it is well known that persons who use large quantities of tobacco are equally liable to its effects as other persons Is it then through the medium of the nerves of the lungs fauces &c this appears to me to be the most probible way, for we are constantly inhaling the mobific cause, when we are in its neighbourhood, it must be conveyed by these nerves to the brain by which means it produces its effects upon the constitution. This is as much as can be said with any appearence of probability, upon this subject, for we know too little of the nerves, to say by what means, they convey any sensation from one part to another, much lis can we say how marsh miasma is conveyed, whether in substance or is it a mere impression upon the nerves, After all has been said, I do not know, if it would not have been better at once to have confessed our ignorance upon a subject so much in the dark as this we will now proceed to the symptoms.

preceding and attending it. ~~by which~~
Great debility and a general languor
are the first intimations of the approach of
this as well as most other fevers, then head
ache, pain in the back, especially about the
lumber regions, nor indeed is the patient
generally free from pain in all the limbs
great indisposition to locomotion are symp
-toms preceding it; the following may be said
more properly to accompany it, viz heat
dryness of of the skin pulse generally hard and
frequent, though sometimes slow and weak
in consequence of congestion, tongue furred
at first white or yellowish white, towards
the last becoming dark and finally black
which may be considered a very bad sign
the patient sometimes becomes dropsical
there is often a black matter occurred in the
liver and and other parts. and is one of the
worst signs, delirium is common, pustules,
phlegmon, carbuncles, and gangrene; sometimes
Hemorrhage from the ears, eyes, nose and mouth
may be considered as fatal symptoms, excessive
vomiting is very dangerous and should be
stopped as soon as possible as ~~it appears to~~
~~the secretions from the liver~~. flatulence

is a very common accompagnyment in all its stages; sometimes the bile is secreted in small and again in large quantities, and of various hues, being sometimes of yellow, agin of a green or blackish green colour, The urine is sometimes in small quantities. tho' it is sometimes very abundant and high coloured, being dark as the disease advances; a comatose state is to be considered dangerous, the opposite as favourable; a sudden return of strength with a feling as of perfect recovery, is far from being uncommon, in such cases as terminate unfavourably. The patient is usually carried off in lesthat twenty four hours. after such an occurrence, delirium and even mania are not so unfavourable many having recovered after being furious, a constant dread of death may be consi=dered as a very common and fatal symptom the patient often becomes very irritable, the yellow colour of the skin is not universal but is most generally an attendant.

Persons seized with this fever in tropical climates are usually cut off in a very short time often during the first 12 or twenty four hours, if they should hold out

for a week or ten days great hopes may be entertained of a favourable result, and every day it is prolonged after this adds an additional security of recovery. Miasma does not allways produce the same effects, why? because it is not so consentrated at one time as another. and the different clases into which Rush divides it, ought rather to be called different grades of the fever, caused by different degrees of consentration of the miasma. if very concentrated and the predisposition at the same time great, an immediate prostration of strength, attended with coma is the result, and the patient is universally carried off in a few hours: if less concentrated and the predisposition likewise less, languor, head ache, pain in the loins and back, precede a full tense and frequent pulse, is of longer continuation and is consiquently not so dangerous as the former, this I believe is the most common form. As to the the treatment, I do not intend to give

any thing new. but merely to mention some of the most prominent practices now in vogue, and if possible to point out which is best. Before entering however on the treatment, I will speak of the prevention. the first and best thing is to remove from the influence of the cause but when this cannot be done, temperance in eating and drinking and avoiding as much as possible any kind of excitement, is the only means of avoiding it, and this will not allways succeed. Keeping within doors and in the upper stores of our dwellings, has been spoken well of and I think with some reason — Now for the treatment. Dr Rush after trying emetics in the first stages and bark accompanyed by the cold bath in the more advanced stages and finding no relief from them, had recourse to purges of Calomel and jalap.

with great success; as to emetics I cannot conceive why they ever should have been used, for instead of promoting emesis it is our anxious desire to prevent it by every possible means. as to bark it ~~is~~ sometimes appears to be the proper treatment. when the pulse is superficially examined it is found slow and weak which appears to denote an evident prostration of strength; but be a little more particular and you will find another reason for the weakness of the pulse. it is congestion which causes it, and bark will so far from raising the pulse, tend to increase the congestion, what then is indicated? purging copiously purging without which we cannot raise the pulse. a purge then is the proper remedy and there can be nothing better than calomel and jalap x and x— and let this be repeated, if the first

dose has not been sufficient to produce free evacuations; this treatment will more effectually raise the pulse, and often to such a degree as to indicate bloodletting cool air, cool drinks, and cold water applied to the body, is the treatment with which Dr Rush followed purging and bleeding and with great succes. so great indeed that in an extract from his note book he exclames "Thank God! out of one hundred patients whome I have visited to day, I have lost none". As a principle indication of cure in this disease, is to moderate the action of the heart and arteries; antimonials given in nausiating doses are advisable: but it would be perfectly useles. to give them until the intestines had been cleared out by copious purges, then the following prescription, given in doses of a table spoon full every

two hours, will have the desired effect—

℞ Sulph- Mag. ℥ss
Nit- Pot. ij ʒ
Tart. Ant ij gr
Aqua - vi ʒ
pt. Sol—

Dr. James Clark, in his treatise on Yellow fever, as it appeared in Dominica in 1793- 4- 5- 6 agrees very nearly in his treatment with with Dr. Rush. He however is not so favourable to bleeding, blisters he used to stop the vomiting, and combines opium with calomel for the same purpose He also recommends antimonials, the following is the preperation which he seems to prefer

℞ Pul- ant- ʒj
Cal- — - ℥s- to ʒj
Syr- Lint - q. s. fiat mapa in pilulas viij dividenda— This however sometimes produced vomiting; when it was

stopped, and calomel combined with opium resorted to, which would generally settle the stomach. The French physicians have always been to mild in their treatment; gently sweating and occasionally throwing up clysters, with now and then a small bleeding, by which means, no doubt many patients have been hurried to an untimely grave. It appears then that Calomel and Jalap, blisters and antimonials, with a generous treatment after the fever has been reduced; has been the most common and at the same time the most successful practice. I therefore conceive it to be the one which should be used in such cases.

An
Inaugural Dissertation
On Phlebitis

Respectfully submitted to the examination
of the Provost, Trustees & Faculty of Medecine
In the University of Maryland
For the Degree of Doctor of Medecine

By
William A Selden
of
Richmond Virginia

Baltimore March 1832 –

To

George Watson M.D.

of Richmond Virginia

and To

Thomas H Wright M.D.

of the Baltimore Alms House Infirmary

My Preceptors in Medecine

This Essay

Is Respectfully Inscribed

As a mark of the high esteem entertained for their Talents & Virtues,

and as a grateful acknowledgement for their kindness & attention

By their obliged friend and pupil

The Author —

On consulting the records of Surgery it will appear that the disease at present known under the name of Phlebitis, or Inflammation of the Veins, existed at a very early period, but did not engage the attention of the profession, nor was its importance duly estimated until the time of Mr Hunter who first noticed it, and by whom it was considered one of the most frequent of the evil consequences sometimes succeeding to Venesection.

Previous to the publication of Mr Hunters views of the subject all the unpleasant effects following this operation were referred to the pricking or wounding of a tendon, nerve, fascia, or absorbent vessel, and this latter opinion was maintained by some even subsequently to Mr Hunters reports. Inflammation says Mr Abernethy may follow any wound of the cellular membrane and fascia in those parts, and it may of course take place as a consequence of venesection; It may happen also says the same writer that the fibres

of a superficial nerve may be wounded in this operation: but this is comparatively of rare occurrence and the effects moreover of a wounded nerve differ in so great a degree from those of an inflammed vein, as to justify us in regarding most of these cases as consequences of an inflammation of the venous trunk. That this disease was not at all, or very imperfectly understood by the older Surgeons, may be further inferred from the manner in which the veins were treated by cutting, tying, pricking, and burning them, and it seems extraordinary when we consider in addition to this the practice of tying the veins after amputations that it should have so long escaped the attention of the profession. Travers notices a case reported by Wilbanus of a woman whose arm became gangrenous after the formation of an abcess at the wound made in venesection. Here he attributes the mischief to a wound of the tendon of the biceps flexor muscle and concluded that the vein was affected with inflammation in consequence of the vitiated humours of the body being carried to the wound

of the vein. Results similar to those following venesection, may and do occasionally follow the tying and dividing the Vena Saphena major in the cure of varix: hence by some Surgeons this is regarded as a very precarious operation, while by others it is performed without any apprehension of unpleasant symptoms.

Phlebitis in the present advanced state of Surgical Science is comparatively a rare occurrence; but even now, when in the treatment of almost every disease the lancet is so generally resorted to, and the coats of the veins under particular circumstances so often disposed to take on inflammation, the subject is of sufficient importance to demand our utmost caution in the prevention; and carefull investigation into the nature of the disease, in order to arrive at correct views of it, by which we may be guided in the treatment.

In entering into an enquiry of the nature and causes of Phlebitis, a few remarks on the difference of texture between the Arteries and veins might not be inapplicable;

for upon this difference of texture depends the greater susceptibility of the latter to take on inflammation.
In each set of these vessels, the trunks consist of three distinct coats, the external, middle, and internal.
The external tunic of the Artery is composed of fibres of condensed cellular membrane of a whitish colour and interlaced in an intimate manner diagonally with reference to the length of the vessel, thereby giving to it great strength and elasticity both in its longitudinal and circular direction. An accurate notion may be formed of its firmness of texture when compared with the internal and middle coats, by tightly drawing a ligature around the trunk, when the middle and internal coats will be divided, the external remaining entire.
The Middle called also muscular, tendinous, proper coat, is thick of a yellowish colour, and formed of fibres running parellel in a circular direction: these fibres are held together laterally by a very delicate membrane; hence

the facility with which the fibres seperate on the application of a ligature. To the firmness and elasticity of this coat the artery owes its cylindrical shape when emptied of blood.

The Internal to which the name of Nervous, Arachnoid or Common Coat has also been given by Anatomists, is a serous membrane and continued from the Ventricles of the heart; this coat has some degree of extensibility, and according to the experiments of Some considera=ble strength and solidity.

The External Coat of the Vein resembles that of the Artery; the only essential point of difference is, that in the veins this coat is thinner and much more delicate than that of the Arteries. The external venous coat is so intimately connected with the middle as to be with difficulty seperated from it.

The Middle Coat of the Veins is entirely Muscular, and composed of soft extensible fibres, mostly arranged longitudinally.

The internal coat of the veins is more extensible and resistant to rupture than the corresponding one in the arteries, and is thrown into a number of duplicatures or folds called valves. It is also more abundantly supplied with the vasa vasorum, and possessed of greater irritability than it is in the arteries. The coats of the veins collectively says Mr Travers are remarkable for their tenuity when compared with those of the arteries. This difference of texture between these two sets of vessels in a natural state might "a priori" lead to the inference that a difference no less striking existed in a pathological state.

The coats of the artery are subject to an inflammation which terminates in a deposition of osseous matter which may extend to an unlimited distance; those of the veins are rarely affected in this way, and never to any great extent. The inner coat of the vein is subject to a continuous inflammation; that of the arteries rarely if ever. The inner coat of both arteries and veins are

susceptible of adhesive inflammation, that in the Arterial trunk is defined from whatever cause excited: while that of the venous may be continued from the point of irritation towards the heart, and from the trunk to the minutest branches: I never saw says Mr Travers the internal coat of an Artery furred with lymph: In the vein lymph has been observed extensively diffused over the coats in great quantities. The inner coat of the vein is susceptible of the suppurative inflammation, that of the Arteries incapable of taking on such inflammation unless in a state of ulceration: Veins are also more ~~liable~~ disposed to take on the ulcerative Inflammation than the Arteries.

From the preceeding observations on the difference of susceptibility of the different forms of inflammation between arteries and veins, may be explained the active constitutional sympathy peculiar to the latter.

There might follow a discussion of some length relative to the disposition of the Arterial and venous systems to inflammation; but having neither time nor

ability for such an investigation. I shall not enter upon it; convinced that whatever difference of opinion may exist upon this subject, and however the explination may be given; all must admit the fact that the veins are more than the arteries liable to an inflammation of their coats, which may proceed to an unlimited extent, the symptoms of which are often violent and the results often fatal.

As to the origin of the disease there is still some obscurity, if we view it as of local origin we should expect the disease to be of much more frequent occurrence than it is, from a practice so constantly, and often so carelessly performed as is venesection: besides admitting this there are many other accidents, as when the parts are wounded, lacerated, contused, or otherwise injured.

The apparent inadequacy of local injury as a cause, the rapid and violent character of the inflammation, and the high constitutional disorder which is manifest, would induce us to ascribe it to some peculiar state of the constitution; yet says Travers

it will be found to ensue in a majority of cases upon some slight local injury: The wound of a vein does not take on direct adhesion as that of an artery, if therefore from any cause the external wound is prevented from healing, the irritation may be continued to the wound in the vein and inflammation of its coats be excited.

In most of the cases reported by Mr. Travers the patients who were the subjects of this inflammation were of depraved habits, and Mr Cooper observes that it is more liable to take place in persons labouring under inflammatory affections. From this we may conclude that the inflammation depends for its origin on some constitutional disorder or predisposition excited into action by some irritating cause, among which venesection may be enumerated.

The Symptoms of an inflammed vein may vary according to the degree of violence, one degree of inflammation may occasion a slight thickening and adhesion of the sides of the vein. A more violent degree

may terminate in abscess some where in the course of the vein, but if the inflammation be spread along its coats a more violent train of symptoms will ensue.

The Local symptoms are pain in the tract of the vessel, redness, tension of the vessel giving the sensation to the fingers of a cord tightly drawn; following venesection we have swelling, pain, suppuration and sanious discharge at the orifice, swelling of the surrounding cellular substance. To these succeed other symptoms of a graver aspect: the limb becomes tense and painfull, the inflammed vein becomes apparent under the skin if it be superficial, denoted by a red line in the course of the trunk.

The Constitutional Symptoms in this disease are very various, there is scarcely an important viscus or organ of the body which has not been found implicated.

Destructive inflammation it has been stated has proceeded unobserved to such an extent as to be quickly fatal.

In the Treatment of this disease our attention should

be early directed to the premonitary symptoms, for in many instances the more serious secondary effects may be prevented or much modified. The application of a compress above the injured part has been recommended with a view to prevent the extension of inflammation and the passage of pus into the circulation, and Mr Abernethy has even recommended the total division of the vein. The propriety of this practice however is questioned by a writer of high authority, from a knowledge of the fact that inflammation frequently begins in and extends from the extremity of a vein cut in Amputation. The treatment of this disease after the more violent symptoms are developed must vary according to the constitution and habit of body of the patient. When plethora or a phlogistic diathesis prevails the most active depletory and antiphlogistic measures should be resorted to. In those previously much debilitated from any cause, and when the system will not bear depletion to any great extent, much caution is necessary to subdue

the inflammatory action. The application of leeches along the course of the vein with mild fomentations and poultices to the part have been used with advantage. As auxiliary means for reducing the action of the heart and arteries, recourse may be had to the use of Colchicum, Digitalis, nauseating doses of Tartarized Antimony or Ipecacuanha, and gentle Cascatives, the position of the part is of great importance, it should be so placed as to empty the vessels as much as possible of their blood, hence the member should be elevated; gentle pressure by means of a roller wet with the Lotio Plumbi Acetatis, has been recommended by A. Cooper. Blisters have been used with decided advantage by Professors Physic and Chapman, the latter of these gentlemen speaks in the highest terms of them.

In a case of Phlebitis following venesection reported by him in the October No ~~for~~ 1811 of the Eclectic Repertory they were usated to with the most decided benefit, as they produced an amelioration of the more violent symp=

-tons though the case subsequently proved fatal; He completely enveloped the arm (except the orifice, which was covered with an emollient poultice) from the elbow to the shoulder. There is nothing I believe says the Dr so efficacious in a case of an inflamed vein as a blister.

There still exists a difference of opinion as to the cause of fatal termination in this disease. Some attribute it to the extension of inflammation to the lining membrane of the heart. and others to the pus conveyed to the heart and general system through the circulation. That both these processes sometimes tends to the destruction of the patient may be admitted, but that neither is the sole nor even general cause, must be insisted on from the following facts. In many cases of Phlebitis which terminated fatally and which were submitted to Post-Mortem examination, no trace of inflammation could be detected in the lining membrane of the heart; but with very few exceptions the inflammation did not extend

more than six inches either above or below the orifice against the opinion that the passage of pus into the circulation is the cause of the fatal termination of the disease, it may be urged (as observed by a late London writer) that in addition to the absence of pus, in many instances the early appearance of the symptoms in some cases seem scarcely to correspond with the time usually required for the formation of pus. The preceeding positions being admitted, the question still recurs. What is the cause of the fatal termination of this disease? And when we consider the importance of the veins in the Animal economy and the quick sympathy existing between the constitution and the venous system, it may be readily answered; for like many cases of violent constitutional irritation superve=ning upon an apparently trifling injury, the system sinks under the general disturbance & excitement —

A Dissertation

Submitted to the examiners

of the Medical Faculty

and the Medical Faculty

of the University

of Maryland

for the Degree of

Doctor of Medicine

by William Kelly

of Baltimore

On the 6th day of April

1852

A Dissertation on Dysentery

Submitted to the examination
of the Provost, the Trustees
and the Medical Faculty
of the University
of Maryland
for the Degree of
Doctor in Medicine

By Nathan Hussey
of Baltimore.

On the 4th day of March
1832

"Had antiquity, numbers, rank and power, been just arguments in favour of existing opinions, a thousand truths would have perished in their birth, which have diffused light and happiness over every part of our globe". Rush

To

Nathaniel Potter M. D.

Proffessor of the Theory and Practice in the U. M.d.

Respected Sir,

If a person so humble as myself may be permitted to express an opinion of one deservedly exalted in public estimation as a medical practioner — then I would say, if extensive acquirements, a profound knowledge of human pathology, aided by the light of experience, collected from an ample field of practice, would serve to render any individual Eminent, you are much more than ordinarily distinguished —

Allow me to say that I feel the highest esteem for your private character — in language I cannot express it, — with this simple statement of my regard

I subscribe myself your friend and pupil.

Nathan Hussey

Dysentery.

"A genus of disease in the class Pyrexiae, and order Profluvia of Cullen's Nosology. It is defined by him as being a contagious fever; frequent mucous or bloody stools; the natural faeces being, for the most part retained, with griping and tenesmus." This definition is considered as erroneous by received authorities on the subject, as well as the improper and unsuccessful treatment growing out of it. We deny that this disease is contagious, or its attendant symptomatic fever. No could those who so confidently state its contagiousness adduce a single proof to substantiate it. The symptoms which constitute the character of dysentery are griping pains of the bowels, frequent desire to go to stool, the evacuations being watery, mucous or bloody, and without any mixture of natural faeces. The patient unceasingly complaining of a load in the intestines, which he endeavours to void by violent efforts of straining, and though he knows them to be ineffectual, he feels them to be irresistible. Small lumps like

the cells of the intestines are sometimes passed, but their appearance
not uniform, nor of much impotance. The acute form of dysentery
s accompanied with considerable fever, which has sometimes
chill or cold stage preceding the heat and reaction. In
his state of disease in the alimentary canal, the tongue has
e appearance sometimes of being covered in the centre with
dark fur; or if the secretion of bile should be considerable,
its posteria part the colour will be yellow; or it is red and
loey. When the cases are severe there is much gastric initability,
e blandest fluids not being retained, while a continual
hirst is present; or there is a sympathetic irritation takes place
the whole tract of the alimentary canal, by which tormina and
esmus succeed immediately the exhibition of the mildest fluids.
he nervous system is also severely affected. Nothing appears to
bilitate the body so much as purging from dysentery. In bad
ses the urine is high coloured, scanty and occasionally passed
sh with difficulty and pain; and so great is the exhaustion of
wer, that staggering or giddiness, and sometimes syncope takes place,

when the patient's posture is erect. And also may be noticed
mong the symptoms hiccup and cramps of the gastrocnemii.
The most striking circumstance attending dysentery is the variety
f types it assumes. It frequently puts on a low or typhoid type;
et it is in most instances inflammatory. It makes it appearance
early as the month of june. When it takes place in june there is a
ntinued fever of a mild grade. Its occurrence in august is
stead of a bilious remitting fever; and when this is the case we
ay suppose the liver to be diseased. In all times it is said,
he occasional or exciting causes have been well understood.
triking out contagion, which at least on our list shall
have no place among the number. Perhaps the most com-
mon of its exciting causes is a sudden check to perspiration,
specially after that secretion has been excess. Hence
he disease is most prevalent in the autumnal months, after
hot summer, when the nights are beginning to get cold and raw,
th heavy falls of dew, while the middle of the days are still as hot
in the midst of summer. The night dews of hot countries are there-

re to be particularly avoided; but in some cases it appears to have
en brought on by exposure to the direct rays of the sun and excessive
atigue. A form of the disease is also occasioned by the introducti-
of putrid vegetable matter into the stomach, such as flour,
bread in an incipient state of putrefaction. It has also been
ated that a change of diet will produce it. an instance of
hich occurred during the revolutionary war among the
outhern troops, when they were victualled with fresh provisions,
which they had not been accustomed. This disease is peculiar
warm seasons and climates. Upon opening the bodies
those who have died of dysentery, the internal coat of
he intestines is found to be affected with inflammation
d its consequences. The ravages principally of the disease
ppears in the colon, a deep livid hue sometimes, at others, a
light external blush; or an erosion of its coats may have taken place
nd the faeces escaped into the cavity of the abdomen. By the
hickening of its coats the calibre of this intestine is much
essened; the liver may be indurated and preternaturally small

scirhus and enlarged; the bile always having a morbid
ppearance. The pathology of this disease has been a fruitful source
dissention among medical authors." That an inflammation of the
ucous membrane of the intestines is to be referred to heat as its remote
use there can be no doubt, because it is to be found in situations
here marsh effluvia does not exist, altho' it has too
nerally been ascribed to this cause. The same cause exerts
powerful influence on the liver, and hence the state of the liver
thus far connected with dysentery. There is nevertheless an
flammation of the mucous membrane of the intestines, more
timately connected with the condition of the liver, with a more
tinct remitting fever evidently arising from marsh effluvia.
n this case the remittent is the epidemic, and it occurs in autumn
n the usual season of the other variety. This is usually a more
flammatory fever and requires a more vigorous procedure to cure it.
It is always accompanied by a congested state of the liver,
d frequently by a suspended secretion of bile and an obstinate
nstipation of the intestines. Besides the comparative indication

" bloodletting, it always requires the long continued use of the
thartic powers; especially heavy doses of calomel, which are
dispensably necessary to restore the hepatic secretion. The conges-
on is in many cases as obstinate as in the yellow fever, and requires
same force to remove it." As we find in this disease all the
fferent grades, from the most violent bilious remittent, down
a typhus, we must have different modes of treatment. The
rinciples which we would propose to govern us would be
gulated, first, by a consideration of the tendency to inflammation
hich exists in the mucous membrane of the intestines; secondly
that seeming spasm of the muscular fibres in connexion
ith the diseased membrane, which causes a retention of
e faeces; and finally of that mabid increase of irritability,
hich prevails in this as well as other affections of the mucous
embrane of the alimentary canal. The fulfilment of these
veral indications require a recourse to different remedies.
If the fever was very high, the pain constant and severe,
esides the local symptoms of purging, griping and tenesmus;

from the bowels considerable discharges of blood. a if all were
nbined, then we would endeavour to ward off inflammation and
s organization, proportioned to the urgency of the case, by general
local bloodletting; we would apply externally to the abdomen,
mentations, and internally emollient glysters. The excitement
enerally by these means would be lessened, and the local
flammation, after which we would proceed in the following
anner. To act on the secretions of the liver, mercurials; to
store the functions of the skin-antimony; and to quiet inordinate
itability in the intestinal canal-opium. In this climate
here the character of the disease is not generally so violent as it
in the tropical regions, the remedies need not be used with the same
gree of urgency. Therefore we might ordinarily commence with a
se of Sulphate of magnesia followed immediately by a
w grains of calomel, after which we may use a combination
calomel, opium and pulvis antimonialis, - say half a grain of
zium, one grain of the sub muriate, and pulvis antimonials two grains
ery six hours; not omitting however to prescribe a laxative every

y, requesting at the same time the patient to be kept as quiet as
ossible: and to resist as much as he can the inclination to stool
Flannel should be worn next the skin, and the diet should be
ght and digestible. The cathartickes will remove ~~will remove~~
y accumulations of hardened faeces from the cells of the colon;
there should be any there, though this is not always the case.
The use of the laxative must not be permitted to interrupt the
rogress o the exhibition of the other medicines, since it is to be
nsidered only as an assistant. In most cases an alleviation
the symptoms will be perceived in a few days; though this
itigation until the mouth becomes affected by the mercury may
t be considerable. When this has taken place, we will
eceive in the appearances of the disease a total revolution.
The skin will feel moist and soft; the appearance of the stools
ill be more natural; not so much mixed with blood o mucous;
ssed with less difficulty; and having more of the smell common
faecal matter. In fine, a majority of patients will now
ave little to complain of, except it be of their mouths, the tender-

s of which prevents their taking food after their appetite has turned. We are now to gaurd our patients against imprudence respect to diet and against cold. The whole of the symptoms ll disappear; patients will have a rapid recovery, and after disease and the mercurial action on the system a certain degree corpulence will succeed. It is sometimes the case, that the liver been disordered, or that the disease may have been of some standing eriors to medical assistance being required, then we would vise under these circumstances, and after a subsidence of the princi. symptoms of the disease, and in order to restore to a healthy state biliary secretion; that a mild mercurial action be kept for a short time longer in the system, perhaps a fortnight. We are fully aware that there is in the minds of many persons a lgar antipathy to a mercurial sore mouth, and that against ercury an illiberal clamour has been raised. But we are not governed by vulgar antipathies and illiberal clamours: a ractice successful, and firm will, we are persuaded, finally vail over any short imitation which the use of this remedy may

ay have caused; and the fear of this medicine will most
uredly deprive us of a powerful mean in the cure of diseases;
d which others may use if we do not; and we may thus not
ly lose our patients, but our characters may suffer loss.
Infusions of tobacco hath been highly recommended to be
ven in form of glysters; we would not prefer them, and if any
were used, let them be of bland and uninitating nature,
mposed of starch and laudanum or mutton broth,— These
ight soothe the tenesmus if they could be retained, at least they
ould produce no irritation. The warm bath or fomentations
s been highly lauded, after the subsidence of the inflammatory
mptoms: should there be much febrile excitement, we would
t advise the bath, but by a proper use of the antiphlogistic
eans, particularly general and local venesection, we would
ould endeavour to reduce the inflammatory action. The
mination of this disease is sometimes rapid, finishing its
urse in twelve hours; or it may be three, five or seven days;
ut when marked by such rapidity in its termination, it is

onsidered to be of the most unmanageable character. In jails
d hospitals, where it has the most speedy termination it is
ended by an extreme degree of weakness. The chill in dysen-
y has sometimes proved fatal. The typhous form of this
sease is known by the following symptoms:- ghastly express-
n of countenance, fainting, stupor, heaviness and delirium, with
discharge of green bile from the mouth; the first symptoms are
ten headache and watchfulness; if the debility is more
ongly marked; the tongue and teeth become brown or black, and
e voice weak; excessive pain in the bowels or none at all;
tools exceedingly copious or very slight. The colours of
he stools are various; black, green, dark, serous or mucous.
The pulse intermitting, thread-like and low, with other typhous
mptoms, as cold extremities, picking of the bed clothes, and
ippocratic countenance, and when these succeed death soon
oses the scene. The treatment of this form of dysentery may be
mmenced with an emetic; and its operation may be assisted by
decoction of bone-set or chamomile, the bowels may then be

e opened, and by the debility is to be regulated the degree of
urging:— It will be the safer plan to follow gentle purgatives
tonics; and sudorifics after their operation will be found
answer ~~to~~ well. In all cases the evacuations should be
ufficient to free the bowels from any morbid accumulations,
the same time weakness is to be guarded against by giving
ter every stool some astringent, a dose of laudanum with
alk, or kino.— The system must be sustained by soup—
Van Swieten recommends a half pint of wine, a pint and
half of barley water, an ounce of cinnamon water, and
e ounces of sugar, taking an ounce every hour. Wine whey;
d volatile alkali; cinnamon, pepper, allspice and cloves, are
proper stimulants in this type; where the stools are copious astringents are
cessary. The application of blisters to the legs in the last
ages are frequently serviceable. Musk, snake root, and the
lphate of quinine will also be found to be useful. It will
proper to manage the convalescence by mild aperients such as
usum rhei in combination with tonics— as gentian, columbo, or

uafsia. The symptoms of dysentery, however, must be strictly
ttended to, as otherwise the tonics may reproduce the disease
om irritation of the bowels. In dysentery the diet should
light and easy of digestion; rice water, barley water, tapioca,
ago, arrow root, &c. The danger of narcotics, spirituous
edcines and astringents in the course of treatment cannot be
ged too seriously; a transition is produced by them; and
eumatism, ophthalmia, apoplexy, and epilepsy, or cutaneous
seases are their consequences.— Chronic dysentery is frequently
affection of the liver. Sometimes it is connected with derange-
ent of structure in the colon, particularly ulceration of its mucous
mbrane: when ulceration has taken place, the case is most
plorable, and very seldom terminates favorably. The patient
ay linger a long time, altho' the emaciation and weakness
extreme,- until at length from the incessant discharge, nature
hausted sinks.— The local symptoms of chronic dysentery, are
the most part, different from those of the acute form, only, in
degree of their violence. If the ulceration of the membrane

hould be extensive, pus will be detected in the excretions; and
sion of function in the liver may be known by the appearance
the urine and stools; in the latter the bile will be vitiated
d deficient; it will be seen in the former where it ought to not
be seen: and its passage along the urethra it will be sensibly
lt. The treatment of the chronic state of this disease best
supported by experience, is to make use of such medicines as
ll give tone to the system and promote digestion. In order
do this, decoctions of oak bark, columbo, and other tonic
dicines, would we think be proper, being careful at the same
e to avoid all irregularities of diet, and regimen, as an aggravation
the symptoms would be the consequence. Where the disease was
nplicated with a morbid state of the liver, mercurial alteratives
uld answer a valuable purpose. These are the principles
hich would govern us in the treatment of this malady, know-
g it to be a dangerous disease, and that a correct understand-
g with regard to it, is necessary to a judicious practice, altho
believe the best regulated measures will sometimes fail.

An Inaugural Dissertation
— on the —
Cause of Fever

submitted to the examination

of

Provost Trustees

And

Medical Faculty

— of —

The University of Maryland

— for the —

Degree of Doctor of Medicine

On March the 1832

By Presley Neville Williams.

Cause of Fever.

Men of Science, have, with unremitting labour and indefatigable research in all ages of Civilized parts of country, endeavoured to satisfy themselves and the community at large, by many ingenious and somewhat plausible arguments of the great cause of fever, which is at present the subject that I have chosen for investigation; and should I in the course of my observation be led into error, I hope your experience and profound knowledge in science will detect & alter the same for the instruction and gratification of him who has had for two successive winters, the pleasure & satisfaction of listening with great interest and much deference to your able, instructive and frequently amusing lectures.

Their labours have been in vain and it remains for others to attempt developing the cause of the formation of that dreaded substance, called (if I may be allowed the expression) Malaria, or Marsh Miasma, which I fully believe is owing to nothing else than Carburetted hydrogen gas, which is given out in great quantities from many parts of our earth. It is a fact well known to scientific men, and no doubt to persons residing in the neighbourhood of those places, which produce fever that the surrounding atmosphere, is composed of more

gasses than can possibly be proved to be conducive to the health of the inhabitants. Therefore I contend that it is produced by carburetted Hydrogen, mixed the Nitrogen and oxygen gasses which two last compose pure atmospheric air, that is such air as is fit to be breathed by the human race.

I believe the correct theory of respiration is all those important changes, which those two gases, Nitrogen and Oxygen undergo, in uniting to certain principles of the blood and by their affinities driving off the compound substances by expiration, which are no longer beneficial to life, and if retained by inspiration of the other gases, they would disarrange the action of so highly an important principle as the blood, which is well known, when added to, or taken from any other substance, when the change necessary to the support of life undergoes any other process than that from Venous to Arterial blood, either produce the hot or cold stage of fever.

For example, I will here mention the mode which
s supposed, and I think correctly, of the formation
f blood. —— Its passage into the lungs undergoing
its changes and passing for the Arterial to the
enous blood: I mention this, for the purpose of en-
deavouring to prove, that these changes, when acted
upon, by substances which are not conducive to
health of the human race.

As digestion is a process of high importance
it perhaps will be necessary to make a few re-
marks respecting it: as in this subject, it will be
necessary to explain the origin of the disease.

In the first place, the food is taken
into the mouth, is blended with a very consi-
derable portion of saliva, it is then by a uni-
ted action of the various muscles of deglutition
conveyed into the oesophagus, which with its
alternate contractions, propels the substances
into the stomach; then it undergoes a very
considerable change, and in the course of a

few hours is converted into a homogeneous pulpy mass which has been thought proper to be termed Chyme and then has little or no resemblance to the original food.

This effect is owing to a peculiar fluid secreted by the glands of the stomach and has been called the gastric juice — this is a substance which possesses an energetic solvent power, but very little or no light has been thrown upon the formation and little less of its composition. Sir Everard Holme's philosophical researches have shown that liquids are rapidly removed by absorbants belonging principally to the left or cordiac portion of the stomach, and that during digestion there is an imperfect division of the stomach, forming two cavities, caused by the contraction of muscular fibres situated about its centre; and he also observes that these liquids soon reach the kidneys, and pass off by the Urine*

* Sir Everard Holme's lectures of Comparative Anatomy, page 331.

it then passes from the stomach into the small intestines, where
changes in a very short time, considerably in appearance
then it becomes mixed with bile and separated into two por-
tions — one of which is termed Chyle, and has the appearance
of milk, the other is carried on to the large intestine,
thence out of the system as excrementitious.

The Chyle is absorbed by the lacteals, which by
their aid is employed into the Thoracic duct. To fur-
ther aid me in my proofs, and also to show in
what manner it is then mixed a portion of lymph
and carried into the venous system. To further aid me
in my proofs and also to show diseases are produced
by the action of the other gases, which are necessary
for the support of life, and also the peculiar action
of the irrespirable gases. Chyle is an opaque, white
fluid, which possesses a saline and slightly bitter taste.
Its specific gravity is not so great as that of the
blood when it is tested by infusion of violets; it
exhibits the presence of alcaline matter, and enjoins
the property of spontaneous coagulation, when taken from

h. thoracicae duct, it becomes galatinized spontaneously
d afterwards soon separates into a firm yellowish
hite coagulum, and a transparent colourless serum
nd when the serum of the Chyle is heated there
es a few flakes of albumen and evaporated to dry-
ss affords a small portion of a substance analagous
sugar of milk; small portions of phosphate of
ime, carbonate of soda and muriate of soda, can
be discovered in Chyle. In Chyle we cannot fail
observe a very close approximation to blood; it
ly differs in colouring matter and the albumen
hich the blood contains only differs from Chyle
in not possessing the vachrine principle: it there-
fore appears, that the colouring matter is form-
d, and the albumen perfected in the process of
circulation. Respiration is the process of receiving
quantity of air into the lungs, whence after having
een retained a short time it is again expelled by
the action of expiration, and if now examined
portion of its oxygen, is found converted into

carbonic acid, and it is more or less loaded with aqueous vapour. Obvious circumstances render it very difficult, to ascertain the quantity of air taken into the lungs at each natural inspiration as well as the number of respirations made in a given time; the former is perhaps about fifteen or sixteen cubic inches and the latter about twenty in a minute. It has been by some supposed, that the air suffers an absolute diminution of bulk, but the experiments that have been adduced, to prove this, can, I think, scarcely be regarded as satisfactory: — it seems on the contrary most probable, that the volume of air expired is exactly equal to that inspired, and consequently, the only chemical change, that is evident, is the saturation of a portion of its oxygen, with carbone: — the quantity of carbonic at each expiration varies at different periods of the day, and probably also in different individuals: it appears at its maximum, during digestion and at its minimum in the morning

when the stomach is empty, and when no chyle is flowing
to the blood. Dr. Prout has shown, that the fermen-
ted liquors and vegitable diet, diminishes the proportion of
carbonic acid, and that the same thing happens when
the system is affected mercury.* The whole of the
venous blood is propelled through the vessels of the
lungs, where it is brought into contact with the inha-
led air, and of course, the chyle is carried along
with the venous blood, and then by the time, that it
is returned, to the pulmonary veins to the left side
of the heart, it undergoes a considerable change
it looses its dark purple and acquires a beauti-
ful florid red, and the chyle, that was carried
through the lungs also becomes perfect blood;—
Now it is well known that this change takes place
by the action of the nitrogen and oxygen, which
it is satisfactory proved, takes place, through the thin
coats of the vessels, the carbon which the venous blood
was loaded with, is the removed by its solubility, or

* Thompson's System IV. 621.

he affinity of the oxygen for it, which then forms carbon-
acid; the only difference detected then between venous
nd arterial blood, is the existence of a certain ex
cess of carbon in the former, which being given off to
xygen forms carbonic acid; then the blood after
his change is fitted by its action on the cerebral
ystem, and support of life, and for the formation
f secretion: — the heart does not actually re-
use to circulate venous blood; but when blood
aerated and passes into the vessels of the brain
analysis and torpor ensue: — the blood suffers
ry important changes in the liver and kidneys,
nd the action of perspiration must be considered as
nected with the circulating fluids, for moisture
arbonic acid, small quantities of phosphoric acid
lime, matter, and also the muriate of soda
e evacuated by the cutaneous vessels. The quan-
of humidity is very considerable sometimes, espe
ally during warm weather, particularly when
taking much exercise, it is at all times, when

he system is in good health, passing off by the
in as may be seen by putting the hand into a dry &
ld glass, which you will discover will become dim
the condensation of the vapour.

I think I have now made sufficient remarks with
gard to the mode of the circulation, formation of
e blood and its connected action on various other
gans with the action and effect of the inha-
tion of such gases as are considered beneficial to
alth, or to carry on the great and mysterious con-
ituted machine of pure nature.

I am perfectly satisfied that the origin of Fever is
ing to no other cause than Carburetted Hydrogen
as diluting the atmosphere too much and
herefore when the system is debilitated and
xposed to the action of the sun and car-
uretted hydrogen, with a non-sufficiency of
xygen to oxydise and carry on the circulation of
lood, naturally and necessarily produce Fever.

for through the medium of the blood, I am satisfied all febrile affections are produced: — observe our common billious up to that of the Yellow fever, which is nothing more than highly inflammatory billiary grade of Fever: Notice the blood in such cases, and what is its appearance? It is in certain periods almost black, and undergoes decomposition with great rapidity, and what cause can that be owing? — To the impure state of the atmosphere, in other words, too many gases being combined; and thereby a non-sufficiency of oxygen in the composition of atmosphere to oxygize and support its circulation. The wonderful changes the circulating fluid undergoes, are considerable, and therefore the violence of attack, aggravated symptoms and the rapidity of approaching death, are certainly owing to quickness and turbidness of the circulation and changes. Examine the typhus: there we find it necessary for blood letting and highly stimulating treatment. What is it for? It is to produce a change in the blood, and to give the system energy and strength to support life.

Dr Stevens, observes, that on opening the heart of such persons as die of the African, typhus and yellow fever, is found a fluid as thin as water and almost as black as ink, what can produce these effects; if it is not owing to too small a portion of oxygen in the atmosphere, That this being the case, is certainly true. I shall therefore take liberty of differing with those scientific gentlemen, who have produce unsatisfactory arguments that Solids are the causes, that produce these febrile effects, when every thing in favour of a insufficiency of oxygen is the principle cause and producer of Fever. Remain, during mid-day, when decomposition is going on, on that portion of the Potomac river, which is termed the flats, where there is but a thin strata of water, and an immense quantity of vegetable matter, and should you remain in that situation, particularly when fatigued, you will have produced, all the symptoms of Fever. During my residence last summer in Washington, I for the purpose of experimenting the nature of the atmosphere

in various places and at different times I found, when upon that portion of the above named river, I would always after remaining for a short time, particularly when debilitated by the exercise naturally produced by rowing to the above named place; I would immediately feel, particularly at mid-day, all those symptoms of Fever. I had several attacks of the billious fever, owing, I believe, to no other cause than visiting these places and thereby not having a sufficiency of oxygen to support the circulation of the blood properly. Owing then to these observations, I was at the risque of my own safety induced to try a number of experiments upon myself: also, upon many animals of the brute creation. The plain proved effects fully satisfy me that fever is produced by a non-sufficiency of oxygen gas — that great and necessary stimulating principle of healthy existence, acting immediately through the circulating medium, the blood.

I will mention a few of the most important experiments — my opinion that I made, as perhaps it will not fail in proving satisfactorily to your mind, that the above

stated principles are the sole cause of fever.

Experiment 1st. During the heat of the day, between the hours of three and four, I exposed myself to the atmosphere of an extensive marsh, situated near the Potomac river, until I felt all the symptoms of fever, and by the time I had succeeded in reaching my residence, the cold stage had already commenced its action: believing that the cold stage was produced by the circulation being too much debilitated, which I supposed to caused by too small a portion of oxygen, which produced these effects on the blood I therefore inhaled at least to four or five quarts of nitrous oxide gas; I sensibly felt after a minute's time, a heated sensation, which appeared to flust over my body, particularly my face — the chill by this time ~~had~~ much abated: — a peculiar numbness occured in my first and second fingers of my right hand principally. The fever then made its appearance rapidly, with considerable violence and very acute pain in my head, with considerable giddiness when I attempted to stand. I then with the assistance of help bled myself

and did observe that the blood was of a florid red colour, brighter I think than venous blood usually is — with regard to its coagulation. I made no other discovery with respect to the appearance of the blood, for which I now sorry. I soon recovered from my illness by the usual mode of treatment. After my recovery, I obtained a rabbit, for the purpose of making further researches, and from close examination, I found it to be perfectly healthy. I took a small portion of blood from the animal, noted its character, appearance of colour, and time of coagulation as accurately as possible. I then placed the animal under a receiver, containing about one part of atmospheric air, mixed with one part & a half of carburetted hydrogen. I then let the rabbit remain for some time in that atmosphere, and when I perceived that it was affected by the inhalation of this compound atmosphere which consisted of oxygen, hydrogen nitrogen and carbonic acid gas. I withdrew the animal, and bled it — observing to take but a small quantity of blood, to prevent debilitating it, which was necessary in the experiment.

I now found that the blood had undergone very considerable change;— instead of being a florid red, it had acquired a dark colour, and coagulated but slowly,— with a separation of the serum, which appeared not of the usual pale straw colour, but discovered a dirty or an unwholesome appearance with a considerable portion of the red globules of the blood held in solution by it. Immediately after this examination, I plunged the animal into a receiver of nitrous oxide. I then let the animal remain until it had recovered its usual appearance of vigour. I then withdrew him and repeated the bleeding and found a third change had taken place in the nature of the blood. It was of a bright florid colour, coagulated rapidly, and I may correctly state, it the looks of healthy blood.

I now exceedingly regret, that I did not ascertain its degree of temperature, from which, I might have made some additional discoveries. This experiment, with my own reflections and researches, sufficiently satisfy me, that the real cause of Fever can only originate from an impurity, or too small a quantity of Oxygen in the Atmosphere to support the

circulation to fit it for health.

Now in that situation, when the atmosphere is composed of Oxygen, Nitrogen and carbonic acid gases; the action was in the lungs, in my opinion as follows: — At every inspiration, the four above named gases were inhaled, and as the circulation advanced, and the venous blood brought in contact with these gases, and by their various affinities, a change produced. Instead then of the carbon of the blood uniting with a portion of the oxygen of the four inspired gases: it an account of the expanded state of the lungs, resulting from the adulteration of the oxygen with other gases. it is prevented from forming additional carbonic acid, and therefore leaves the venous blood in the same state it was first brought to the lungs, with an increase of newly formed blood, produced by the combination of oxygen with chyme, which at the first respiration of the inspired gases, is brought into the lungs, then the non-sufficiency of the blood, which becomes more & more inspired at every inspiration.

Now for the want of a stimulating principle, the great nervous centre is affected, and by its sympathy with other parts of the system, checks the formation of more chyme — the secretion of bile is stopped, consequently the secretion of the skin is prevented, by the great sympathy existing between the liver and skin, so that disease is inevitably the consequence. The best and perhaps the only mode of cure would be blood letting, for the purpose of carrying off a portion of the now decomposing unhealthy blood, succeeded by some means that would produce a fresh supply of healthy blood as rapidly as possible — such for instance as nourishing diet, followed by stimulous, tonicity; and cold application for the purpose of arresting the morbid action of the nerves, to aid an increase of the inspiratory organs; through which one of the most important functions of the human economy is carried on —

Near our rivers and marshes, it appears most generally that this Malaria exists in the

greatest abundance. It is an established fact, that persons, inhabiting such places, are always of a sallow appearance, and in every respect, they are annoyed by febrile affections. Reverse the scene. — View those persons located on high or mountainous parts of country, — there you find the picture of ruddy health, and the flushed rose blooming in their cheeks. What produces these effects? Why are the inhabitants in one situation healthful and in the other unhealthful? In the one place, it is produced by the respiration of pure and wholesome atmosphere, by whose specific gravity, it is bound to their delightful hills, and by the continuation of a gentle breeze, which can play no other voice, than round their habitations, and rapidly waft afar those noxious gases. In the other, the real cause, can be no other, than that which I have already frequently represented and experienced: — A non-sufficiency of oxygen gas.

An
Inaugural Essay
on
Phlegmasia Dolens
Submitted
to the
Provost, Trustees,
and
Medical Faculty
of the
University of Maryland
for the
Degree of
Doctor of Medicine
by
William T. Leonard Maryland
- 1852 -

To

Nathan R. Smith. M. D

Professor of Surgery in the University of Maryland

Dear Sir

The first fruit of my labours I inscribe to you. Not because I thereby conform to fashion; nor is it with a hope of rewarding you for your uniformly kind treatment to me, together with the invaluable instruction which I received while under your tuition as a private pupil: but because I thereby give an humble testimony of respect, inspired by your unbounded friendship towards me, and your untiring zeal in the cause of science and humanity.

That you may long live in the enjoyment of all the happiness allotted to mortality, and ultimately participate in the happiness of Heaven is the ardent prayer of your friend and pupil

The Author

To

Richard Wilmot Hall

Professor of obstetricks and diseases of Women & Children

In the University of Maryland.

This essay is respectfully dedicated as a token of respect for his talents and ability as a teacher and a Physician, gratitude for the many favours received at his hand, and honour for his urbanity as a man —

By his sincere friend —

The Author

Introduction

Medicine presents a field so extensive, so great a variety of subjects claim the attention of its devotees that even the wise, and learned, would probably be placed under momentary embarrassment in the selection of one theme from the multitude whose claims to attention are preeminent.
What then must be the confusion the merite tyro in science, in the selection of a subject suitable for his debut on the stage of authorship. His judgment is not mature, and his fancy still unplaged; he sees but half the field, and unable to scan the beauties of that which he does see. Having only view'd the surface, he knows where the richest or the poorest of the soil lies, which will yield the most abundant harvest, or most needs cultivation. But urged by imperious necessity to the commencement of his task, his spot is selected; now, he knows not the proper management of his implements; and seizing the plough, he involuntery places it in a furrow already turn, and is forced to content himself with breaking a few clods on either side as he passes.

The longer I contemplate medicine, the less I am determined upon a subject for my dissertation.
Depending therefore upon the generous criticism of those whom I address, I propose treating of Phlegmasia Dolens

History of the Disease.

A disease similar in some respects to the swelled leg, has been noticed by the ancients; but the first accurate description of it was given by Mr. White of Manchester in 1784. since which period various dissertations have appeared from the pens of different authors; among which Mr. Tyre of Glocester and Drs. Hull and Ferriar have appeared most prominent.

Various indeed have been the modes of description, and as various the names under which it has been described, although every one seems to hold the same disease in view.

Dr. Good, following the example Dioscorides; adopts the name of Buccnemia Sparganosis (from σπαργαω to tumify, and distend Legs, called it Depôt Laiteux (believing it to be a deposition of milk.) The Germans have called it Œdema Lactium, from the same belief. Dr. Parr in his Medical Dictionary calls it Ecchymoma Lymphatica. Doct. Cullen, Anasarca Serosa, Others, Phlegmasia Lactea. Dr. Hasack, Cruitis. and Dr. Hall, Phlegmasia Dolens.

Thus have descriptions, and names, continually varied, bearing unequivocal testimony of the obscurity in which its Pathology is still veiled. Many have believed the disease to be local, and dependant on some peculiarity of the labour or habit of the patient. But experience asserts that the robust and the feeble, the corpulent, and the lean, the sedantary and the active, the rich and the poor, the young and the middle aged, are alike subject to its attack. Nor does any peculiarity of the labour, or treatment in accouchment seem to cause it, for the speedy and the tedious, the natural, and the unnatural

Those who give suck, and those who do not are alike its subjects. Nor scarcity, or redundance of milk seems to influence it. It has occured after an abortion, with no secretion of milk, and at full time with a plenteous flow of milk. Neither does the state of the Lochia, appear to effect or produce it. Indeed the time is fast approaching when none will contend that it depends on the puerpural state alone or even on the female economy. Some of the most enlightened accoucheurs of the present day assert that they have seen it in the male, as well as female, among which I may mention Professors Hall and Francis*.

Etiology.

As has been noticed above, many doctrines of causes, have been advanced to account for the phenomena presented in Phlegmasia Dolens, but unfortunately they have as yet failed, for their authors holding the opinion that the puerpural state was essential to the disease, looked no farther for a cause than the bed of lying in woman.
From the fact that the disease more frequently attends parturient females than others, the theories had the appearance of plausibility, But the fact being established that the disease appears, at any time, in any other individual sapes the foundation, and consequently destroys the whole super-structure however beautiful it may have been.
But as it has been denied, that it does occur in others than puerpural women, let us examine the hypotheses even on that premise.

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* See notes to Denman's introduction to Midwifery Page 695

Doctor Denman contends that the absorption of acrimonious lochia by the lymphatics of the uterus was the cause of Phlegmasia Dolens. In order to substantiate this hypothesis, it is necessary to prove that the lochia are always in a morbid state, - that the disease occurs only in the inferior extremity, that the uterine absorbents are capable of that action, - that the absorption of any acrid matter, by these vessels would produce the phenomena presented in the disease. If these positions are successfully controvertible doctrines of local causes, connected with the uterine system fail.

In order to remove the first, and most substantial argument, in favour of Doctr. Denmans hypothesis it is only necessary to refer to cases*, in which the disease has occured, and the lochia remained perfectly natural. Veale attested cases besides those alluded to have occured; but these are sufficient for our purpose.

But the disease has not been confined to the inferior extremity several cases in which it has occured in the superior extremity have been related; the fact is mentioned by Francis † Doctrs. Horsack, Graves ‡ and Stokes; and I have seen one well marked case in the superior extremity. While a student at the Baltimore Eastern Dispensary, a case occured in the district of my worthy preceptor Doctr. C. Coots.

‡ Select Medico chirurgical transactions page 326.

* American Medical Recorder Vol 1st page 455

† vide. notes to Denmans Introduction to midwifery page 695

The patient Mrs. S. aetat 22 years, was delivered of her child while on the Eastern Shore of Maryland. A few days after its birth she crossed a river and proceeded to Baltimore. On the fourteenth day after delivery she was attacked with a pain in the shoulder, arm and hand; and immediately the swelling made its appearance. The limb attained double the size of the other. The swelling extending from the ends of the fingers, to the margin of the clavicle, and scapula effecting the right breast, and traversing the margin of the great pectoral muscle. The limb resembled a piece of polished alabaster in appearance; but was uneven to the touch. She suffered great pain on moving or even touching it. The tongue was furred, the bowels constipated pulse quick, frequent and feeble, urine scanty, and of a reddish hue. The patient was of a very irritable and delicate constitution.

Where must we look for a cause for the disease in this and all other cases, that have occurred in the superior extremity, certainly not to the absorption of a morbid secretion by the lymphatics of the uterus. I am aware that the Gentlemen who advocate the doctrine of the local and specific dependance of the disease, on the morbid state of the uterine system; very easily rest under the sage conclusion, that the cases reported as Phlegmasia Dolens in the superior extremity were mistaken for some other disease, as Phlegmon, Anasarca Rheumatism et, cetra.

This certainly is a very modest encomium on their superior, a generous reproof for publishing a wrong account but in my humble opinion, a most pitiful subterfuge for a defence of their theory. Respectfully Standing

Notwithstanding the objections of those gentlemen, I assert on the authority of the great men before mentioned; as well as personal observation that the disease does occur in the superior extremity.

With regard to the third position necessary to be substantiated, in order for the theory to be even plausible viz. that the uterine absorbents are capable of the action, it may very reasonably be doubted whether they are or not.

The opinion of some of the best Physiologists, is that the absorbents do not act by capillary, but by a vital power; by which they are enabled to open and receive those substances which are proper for their use, while they contract on all irritants. Nature indeed seems to have given every organ in the economy a kind of elective affinity for such substances as they are calculated to act upon, and we frequently find an organ refusing to receive or act upon anything that is offensive, and endeavouring to cast it off, thus often when indigestible food is taken into the stomach, there is a convulsive action produced in order to throw it up. A styptic applied to the mouth of a denuded vessel, causes it to contract, Carbonic acid gas, produces spasm of the glottis. Munroe speaking of the contractile power of the absorbent; says. "by means of this muscular contractile power the lymphatic vessels, adapt themselves to the different substances presented to them, opening and receiving those which are of a mild nature and contracting on those of an irritating character*.

From these arguments it may be very reasonably doubted, whether the uterine absorbents are capable of taking, or if they

* vide. Munroe's outlines of Anatomy Vol. 2nd page 292 Edit

will take up the morbid lochia, which according to Doctr Denman's own acknowledgement is acrid in its character.

The question next arises, - if the lochia were absorbed, would that account for the phenomena presented in the production and appearance of the disease? The disease occurs at almost every period, from a few hours after delivery, to several weeks afterwards now in all other cases where disease arises from the absorption of a virus, there is some regularity in the time of its developement; the latent period of small-pox is commonly from 9 to fourteen days; the same may be observed with regard to all other diseases, arising from a specific virus

But I am answered this is not a specific virus in the sense that the matter of small pox is, but that it produces its effects merely by the irritation which it produces as a foreign body in the lymphatic vessel but if such is the case, how will we account for the apparent returning health which a patient sometimes experiences after confinement; being able sometimes, to leave her bed and perhaps her room, without any symptom of disease; but suddenly becoming "very irritable, a sense of great weakness, and previously depressed in spirits, (Denman) thus announcing the approach of disease; if; the disease is the result of irritation, produced by acrid matter, absorbed during or shortly after labour, certainly the symptoms would be gradually developed from the time of absorption of the acrid secretion, the effect would commence from the first exercise of the cause.

We sometimes also find the disease occuring so soon after delivery, that it seems to preclude the possibility of such a cause as absorption of acrid lochia.

Let us now enquire does Anatomy sanction this theory? Doctor Denman says, "The principal seat of the disease will depend on the course of the lymphatic vessel which has taken up the offending matter." Grant it — but does any lymphatic convey its contents from the uterus to the toes? certainly not! but such is the course of the disease.

Munroe tells us that "a poison which has entered one part of the lymphatic system, is rapidly conveyed into the blood, producing in its course, a swelling of the lymphatic glands between the place where it was absorbed and the heart" Hence from a putrid substance taken up by the vessels of the uterus, we should expect a swelling of the lymphatic glands along Poupart's ligament, thence taking the course of the iliac artery, affecting in its course all the lymphatics of the abdomen, but, no such phenomena are seen to occur. Hence we must conclude that no such cause exists and that the morbid lochia when they are seen, are an effect and not a cause of the disease.

Mr White although well acquainted with the symptoms and treatment of Phlegmasia Dolens, seems to have fallen into the error of supposing the disease local and depending on a local exciting, and proximate cause, He says the pressure of the child's head (during a labour pain) upon the lymphatics of the uterus; produces a rupture of some of the lymphatics and consequent extravasation of a lymph. The same objections, that have been preferred against the former theory; may in part be urged against this also; We cannot on this supposition account for the difference of time manifested in the developement of the disease, in different cases; expecting of course if the rupture was produced during labour, that the extravasation

extravasation would commence immediately consequently the symptoms developed in a gradual and uniform manner; but on puncturing the limb there is no effusion of extravasated fluid as we should expect on this ground; on the contrary there is gangrene, and death produced instead of a cure of the disease.

Granting that there is a rupture of some lymphatic vessel, should we, should we then look for glandular swelling, and induration, as a primary symptom? certainly not; and yet such is the fact in Phlegmasia Dolens. In the case of a rupture, what can occasion swelling of the glands? the only medium through which a poison could attack them is their own vessels which being ruptured and pouring their contents into the surrounding cellular texture as fast as received, of course they could not participate in causing a swelling of the glands; we should rather expect the glands shrivelled than swelled and indurated.

Mr Casper Mr Tyre Doctor Ferriar and many others have agreed that Phlegmasia Dolens is an affection of the lymphatics of one side, but the cause of that affection no two of them have deemed the same. But each firms his own opinion and firmly and enthusiastically adheres to it.

Doctor Good accounts for the phenomena of this disease by calling in the aid of Mr Hunters "stimulus of relaxation". He says "the weakly lymphatics, now destitute of the surrounding pressure, and stimulus which they possessed during pregnancy; yield easy to the flow of fluid which they have to convey; and on this account become morbidly distended and inflamed in consequence of distention"

Certainly this is the only case as well as the first in which disease was ever in a part, from the removal of an obstacle

Ex its

to its usual and healthy action, we had as well accuse the ox of not knowing how to walk when the yoke was taken from his neck. If we bandage a limb so as to impede the circulation, will disease itself when the bandage is removed? certainly not, but we may find and answer to the Doctor in the edema that effects pregnant woman, soon as the pressure occasioned by pregnancy is removed the action of the vessels will in due time be performed with its wonted ease. A vessel that quietly labours against the pressure of a distended uterus, and the column lymph beside, cannot refuse to act when the pressure is removed and the weight of its own contents too, in a great measure, from the horizontal position of the patient, almost uniformly after delivery. At all events the pressure of the distended uterus cannot account for the disease being located in other parts of the body; and particularly in the male subject.

But the Doctor argues on the premise that the disease is confined to the inferior extremity and is strictly local in its character. Facts are against him! the effects are not local, indeed the local systems are not always the primary ones for as Doctor Denman says, the disease is frequently ushered in by depression of spirits, great anxiety &c. indicating evidently that the nervous system is concerned. The secretions generally are affected, also the pulse, and the appetite, all proclaiming in the most unequivocal manner that the whole system is affected. And as well might we contend that Gout is a local affection, because it is usually manifested first on the toes or somewhere else in a local manner or confine the effects of Scrofula because the glands of the neck exhibit the diathesis earlier than some other parts of the system.

Of the

If the primary symptoms of Phlegmasia Dolens, are frequently constitutional, if its effects are always so, why should any so stoutly contend for a local, proximate cause, confined to one condition of the system. Why should we wish to make, not only all healthy action, but even disease subservient to our own idea of locality, particularly where no practical advantage can be obtained. Phlegmasia Dolens is the same let it appear where it may or under whatever circumstances it may, No matter whether it occur in the leg arm, or thyroid gland* our treatment must be the same, so also if the labour be speedy or tedious, milk, or no milk; if the patient be male or female the swelling pain&c exhibits the same phenomena, and is acted upon, alike by the same agents, why then should we obscure the subject with different names, and create different causes, according to the place of its location or if different names must be given to the same thing as it may occur at different places. why not let them be such as would designate the locality of the disease in each case.

From what has been previously said, it plainly appears, that no doctrine of local causes confined to the uterine system is likely to be of utility or at all sufficient to explain the phenomena of the disease. As it arises sometimes independent of the puerperal state or the female economy. That it may occur after low fever can be proved beyond doubt.

It is true, that some have attempted to show a difference between the disease that occurs as a sequela of low fever and the true Phlegmasia Dolens.

But Doctor

* It has been suggested that the Bronchocele, attendant on parturient females is essentially Phlegmasia Dolens

But Doctors * Graves and Stokes whose experience was ample saw an accurate observation of numerous cases both of Phlegmasia Dolens occuring after delivery and of painful swellings of the extremities appearing during or after a fever has convinced us of the pathological identity of the diseases."

From the most authentic accounts that can be obtained relative to the nature of this disease we are constrained to believe, that cold operating on the system whose idiosyncratic state predisposes to this disease is the most frequent if not the only exciting cause of the disease. It is not necessary to enter into a discussion as to the possibility of such a cause acting at all times, when it is known how easily and imperceptibly any agent will act on a system thus predisposed. In answer to the question. Why is the disease more frequent in parturient females than others? It may be answered that pregnancy or accouchment may be a predisposing cause and is probably the most frequent predisposing cause, but certainly not the only one.

Pathology

That Phlegmasia Dolens is essentially an inflammatory disease, seems to be the unanimous opinion of all pathologists of the present day, but the tissue most deeply involved in the disease, is yet a matter of discussion. Doctor Davis of London seems to consider it as inflammation of the veins while others deny that the veins are concerned in the disease and certainly the phenomena and consequence of the disease do not seem to warrant the opinion. For Phlebitis to so great an extent as disease appears to exist in Phlegmasia Dolens would almost inevitably

* Select medico chirurgical translations. Philadelphia Edition (Page 326) prove

prove fatal in nearly every case, Though I do not deny that the veins are concerned, in some cases indeed we may sometimes discover a hard ridge in the course of the Saphena vein which is remedied by leeches applied in that direction Though in some cases the ridge is not discoverable, Doctr Ferriar regarded it as a general inflammation of all the textures of the limb; And Doctr Hall and Horack seem almost as willing to follow this wholesale doctrine.

Professor Caspar seems to have struck at a mark more reasonable than any other that has been noticed i.e that it is an inflammation of the cellular tissue and local absorbents of the part. This theory we think will more satisfactorily account for the phenomena presented, than any other, By this theory we may account for the hardness felt in the course of the lymphatics for the increase of heat, pain and swelling

The increase of heat owing to the greater quantity of blood circulating in the part, the pain is produced by pressure on the nerves and the swelling, to the effusion of a fluid of a coagulable character, It has been remarked by Doctr Graves and Stokes that the cellular tissue seems to follow the same law as serous membranes moderately inflamed it pours out serum

When the irritation is more intense the effusion is also it contains animal matter, approaching in its qualities to coagulable lymph and is sometimes in a puriform state.

When suppuration has occured in Phlegmasia Dolens it is on account of more intense inflammation; sometimes produced by an additional local irritant as a puncture, which in those cases is particularly liable to ulceration.

The intermediate degree of action between the effusion of serum and of pus seems to be such that the swelling partakes of the

nature of

nature of partially organized cellular tissue. Whatever may be the fate of this theory, I feel assured that none hitherto advanced has approached nearer the truth, and should it ultimately be abandoned it will at least reflect upon its author the meed of ingenuity.

Symptoms

The disease appears generally between the ninth and fourteenth days after delivery, though the time of its appearance is very irregular, occuring at almost every period after delivery; from a few hours to several weeks, indeed in some cases immediately after the birth of the child the disease makes its appearance, while at others the mother is enabled to sit up, or walk about, without any appearance for some weeks. Its precumenary symptoms are anxiety, restlessness, depression of spirits. The patient is very irritable and yet complains only of "transcient pains in the region of the uterus" which however is an indication of the approach of disease. But soon it becomes more manifest by excruciating pain and stiffness in the groin of the affected side, attended with a chilly sensation, soon succeeded by pyrexial symptoms The pulse is quick, frequent, and feeble, tongue furred and white, the countenance wears a cadaverous hue, the bowels are constipated, faces of a clayey appearance and the uterine discharges (generally) offensive, and unnatural, great thirst and loss of appetite".

The limb presents a hard, shining, smooth appearance swelled to nearly double its natural size very tender to the touch but communicating the sensation to the fingers of knots and ridges under the skin (some writers have supposed this to be muscular contraction others lymphatic glands enormously enlarged, and others, again, effused coagulable lymph.)

The sudden

The swelling is extended to the labium pudendi of the affected side, and seeming to be abruptly stopped at the medium line the lymphatics of the groin are enlarged and indurated.
The limb is deadly pale, from the moment of attack the patient loses all power of motion with the limb each attempt to move it only increasing the torture, The swelling commences about twenty four hours after the pain, from which time there is a gradual abatement of the pain. The disease reaches its acme in about forty eight hours and continues in that state, for eight or nine days, during which time the patient passes many sleepless nights and perspires profusely, after which the swelling gradually subsides, the fever abates but the patient is left feeble, the limb stiff and sometimes weak and powerless, and for some months the skin is less moveable on this limb than natural.

Though such is the regular course of the disease it is by no means its universal character, there being deviations from this course very frequently, and in many ways. The pain is sometimes first felt in the hul, indeed so frequently is this the case that some authors have described that as the most usual course of its developement, again it has commenced by a sudden pain in the calf of the leg as in a case that came under my notice but a few weeks since, in this case the patient was attacked on the fourteenth day, being seized with a pain in the calf of the leg as she was rising from bed, without any previous symptoms of disease, without any disturbance of the secretion of milk or derangement of the lochial discharge.
In this case there was sufficient proof that cold was the exciting cause of disease, During the whole progress of the disease which lasted about two weeks there was no derangement in the secretion of milk, there was some hardness along the course of the

of the lymphatics, and considerable glandular enlargements in the groin.

Suppuration and gangrene rarely occurs, and never under proper treatment. But when it does happen the cellular membrane sloughs out from between the muscles as in erysipelas. There is sometimes a foul aphthous affection of the mouth and fauces, which occasions great difficulty in taking either food or drink.

Doctor Eberle says, he has seen two cases terminate in this way owing to the ruinous treatment of an empyric under whose care the cases were placed. Doctors Eberle and Houston declare that in all cases which they have seen "the secretion of milk was diminished and in some entirely suspended during the violence of the disease". This statement is not corroborated by the experience of others.

Few diseases are more violent in their attack, and but few occasion more anxious solicitude, both in the minds of the patient and friends, than Phlegmasia Dolens. But the attack is not alike violent in all cases, sometimes its approach is more gradual and the symptoms so mild that it would appear hesitating as it were, whether it should be formed or not". In such cases the pain is less severe and more diffused throughout the limb instead of being located in different parts. The swelling is also so inconsiderable as hardly to demand attention.

Sometimes both legs are affected successively though rarely simultaneously. Generally in those cases the disease runs its course in one leg. The symptoms begin to abate and the patient is anticipating a happy recovery; when suddenly and unexpectedly

and unexpectedly the other limb is seized and hard as the case may appear the patient is forced to endure the suffering again. However being used to the pain and inconvenience arising from the disease they generally bear the second attack with more patience than the first

We should not consider the second attack as a metastasis of the first, as frequently the disease pursues the same course as if the first had not been subjected to the disease.

There is in some cases remissions and exacerbations even after apparently considerable amendment has taken place which renders it necessary for us to alter our plan of treatment or even to return to our first applications.

Although the disease is thus violent in its attack, and the constitution seems much disturbed, many of the organs appearing unequal to the performance of their functions; yet the constitutional symptoms soon pass off; the disease is more local in its effects, the general health of the patient improves; appetite returns digestion becomes more natural, and she may even menstruate at the proper period disease being apparent only in the limb. This may be still hard swelled tense and shining in its appearance.

Prognosis

Phlegmasia Dolens though so terrible in its appearance and so painful in its course, though it excites fear both in the patient and the friends, and though its hitherto occult character would seem to challenge the utmost skill of the Physician

is yet

is yet a disease of comparatively little danger; rarely proving fatal and never if properly managed. Cases have been recorded of death produced by this disease from the supervention of gangrene and mortification; but these have been universally caused by puncturing the part, for the purpose of discharging a fluid (supposed to have been effused into the cellular tissue) and thus procuring relief for the patient. Doctor Maclom reports reports a case in the American Medical Record* in which the patient was saved with the utmost difficulty after a puncture of the foot, in order to obtain relief. He says several vesications of a disagreeable appearance, their contents not unlike dirty water had spread on the outside of the foot, at the same time there appeared an effusion of florid boiling blood on the top and center of the foot." which ended in mortification and sloughing and was finally removed by the knife; but as before stated if it be properly treated always terminates in health.

Treatment

In the treatment of Phlegmasia Dolens our measures should be prompt and vigorous, for although the disease is not dangerous, its appearance is such as to excite alarm in the minds of both patient and friends, to quiet this alarm is the first duty of the physician.

The treatment may very properly be divided into general and local, or those remedies which are applied to the constitution and those applied to the parts more immediately concerned in the disease.

General Treatment

* vide Vol 1st Page 453.

General Treatment

The general treatment of this disease must be governed by the habit and mode of living of our patient. We should not of course pursue the same plan of treatment with a delicate and nervous female, that we would one of robust and sanguinous habit. But of the general measures that may be used in all cases, these may be noticed in the following order.

Blood-letting,

Blood-letting both general and local is frequently of importance When called on in the first appearance of the disease, while the system is labouring under great excitement, Pain extreme, pulse quick and tense, face somewhat flushed and the swelling not yet remarkable, by the timely abstraction of blood, we may render the disease milder and more manageable. We should bleed until we make a sensible impression upon the system, and if the fever be not abated in a few days, we should repeat it to the same extent, to assist the operation of the lancet in reducing febrile action.

Purgatives

May be subjoined. Those of an alterative character are most beneficial, as they answer the important indication of correcting the secretions; while at the same time they evacuate the contents of the intestines, Dorto; Dewees prefers the neutral salts. He gives the following receipe

℞ Sulph. Magnes
Magnes. Alba ust a a ℥ iii
M. Div. iii.

Take one

Take one of these portions every two hours, in a wine glass full of sweetened water, or lemonade, until they operate freely.
This doubtless is a very judicious prescription and one which may be used with great advantage.

Diaphoretics

Are also very important auxiliaries in the treatment of Phlegmasia Dolens. The pulvis Doveri is an excellent remedy, being at the same time Diaphoretic and anodyne; great benefit is also experienced from the use of the nitrous antimonial powders, Doctor Denman advises the following mixture, as answering the indication, at the same time it promotes the secretions of the Kidneys

℞ Aqua ammonia; acetat ℥ss
Syrup Papaver ℥ss
Spts. nitr mos. ℥ij
Aqua. menth. Tot.
et Aqua pura aa ℥ss.

Mistura Fiat. quarta. vel sexta quaque hora sumenda
To which may be added a few drops of Tinctura opii, as occasion may require. And if there be great depression the spiritus mindereri may be increased or pure Carbonate of ammonia added

Tonics

Are sometimes necessary when the disease occurs in weak, nervous habits, also cordials, opiates or even diffusible stimuli. But these should never be used until febrile action is properly reduced. The regimen previous to this period must be strictly antiphlogistic

Local Treatment

Local Treatment

Doctor Dewees, says, "no application whatever should be made to the limb until after the fever has abated and the pulse is reduced". But to aid in producing this effect a sufficient number of leeches may be pettered over the limb, to draw 5 or 6 ounces of blood. Our object is not to apply the leeches near to each other, as their bites may leave troublesome sores. If the disease does not abate the leeches may be reapplied. The limb should be kept as still as possible, and in the horizontal position. The warm hips bath has been recommended, also, the vinegar vapour bath, after febrile action has been reduced. Frictions with the hand alone, or at the same time using a lineament; for this purpose various articles have been used, as the volatile lineament, some also possessing anodyne virtues.

A very good formula, is the following

℞ Ol Oule ℥j
Sopo Castile q.s.
Acetum Distil ℥iv.
M.

These frictions should always be made from the foot upwards. The flesh brush may be also used. Blisters to the groin have been recommended, but their claims to attention are doubtful. The moxa has also been used its efficacy is also very doubtful.

The Bandage.

The bandage is very important in the treatment of this disease, It should be applied moderately tight from the toes to the hip. Its pressure should be very equal to accomplish which it will be necessary to reverse the roller in order

— that it

that it may accomodate itself better to the inequalities of the member. Some have prefered the flannel roller and perhaps from its possessing some elasticity and exercising also a permanent, but gentle friction, it may be preferable; yet in ordinary cases the common muslin roller will answer every indication.

Thus has a task been accomplished, which was imposed by necessity, and commenced with diffidence.

The errors in doctrine, which have occured and escaped my observation, I hope will be corrected by a more refined judgment, Those of composition will find a sufficient apology in the bosom of candour with all who are acquainted with the author. —

Finis.

On

Inaugural Dissertation

on

Malaria

and the

Mode of Operation

in producing fever

Submitted in the Office of

Dean of Medicine

to the Trustees, Faculty

Medical Department

of the

University of Maryland

for the

Degree of Doctor of Medicine

An Inaugural Dissertation

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Submitted, for the Degree of

Doctor of Medicine,

To the Provost, Trustees and

Medical Faculty

of the

University of Maryland

By

Alexander S. Hawkins

of Baltimore

Md.

March 1832

To Samuel Baker M.D.:

Professor of Materia Medica.

University of Maryland

In token of respect for his talents, gratitude for his instruction and services, and admiration of his private as well as professional character, this Inaugural Dissertation is respectfully dedicated by his pupil and sincere friend

The Author.

To John Emerson. M. D.

Lecturer on the Theory and Practice of Medicine

in the Medical Institute of Baltimore.

As a mark of esteem and friendship, this essay is respectfully inscribed by

The Author.

The importance of a knowledge of the causes which produce disease in the human system, has always been admitted and justly appreciated by every scientific Physician. To attempt the cure of disease without this knowledge, or to endeavour to put the system in a condition capable of resuming its healthy functions when that system is still within the range of the operation of the Morbific cause, is but to protract the sufferings, or hasten the death of the patient: for, if the system when in the full enjoyment of health, is incapable of resisting the deleterious effects of the Morbific cause, much less is it able to overcome the disease itself when formed, even by the assistance of Medicine, unless the cause be removed. The conjoint operation of the cause, and the Medicines used for the removal of the disease, cannot fail to debilitate the system still more, and if continued must eventually sink the patient beyond recovery. We have evidence of the truth of these remarks in the rapid and fatal termination of many diseases (energetically

heated with medicine) the causes of which were unalterably fixed in the human body. Dr. Henderson of the Columbia College D. C. has related several cases of what he considers tuberculous consumption, in which medicines were decidedly injurious. The first patient submitted strictly to what was medically advised; she was closely housed, took much medicine, and yet a fatal termination was not averted. In the other cases not one was benefitted by medical treatment, but on relinquishing the use of medicine, and exposing themselves to active exercise in the open air, the symptoms of disease disappeared, and they were rendered capable of pursuing the ordinary avocations of life.

Scrofula is another disease which will not admit of an active medical treatment. In neither of these diseases can the cause be removed from the system; hence the inefficacy of medicine in their treatment.

Seeing, then, that medicines can do little or no good and very frequently prove injurious as long as the system is exposed to the action of the morbific cause, the first indication in the treatment of disease, is to remove

this cause: but if it be unknown what the cause is, or where it exists, if the practitioner be ignorant of it and unable to point it out to his patient he cannot avail himself of the above indication; he must proceed to administer his medicines and endeavour to relieve symptom after symptom as it appears, untill at length the patient exhausted and worn out by the action both of the cause of the disease and the remedial medicines finally sinks under accumulated disorder, a sad memorial of the necessity of knowing the causes of disease. Admitting then the importance of this knowledge, the inquiry presents itself. What are the causes of disease? The investigation of every cause of disease embraces a field too wide and extensive for me to engage in; how many different causes might be enumerated which produce the same or similar diseases in different individuals? Leaving therefore the general question, I shall in this essay confine myself to one malific cause, one about which much has been written and much yet remains to be known: one which is wide and extensive in its circle, obscure in its nature and deeply interesting, not

only to the medical profession, but to the world at large.

Marsh Miasma, or Malaria is acknowledged to be one of the most prolific sources of disease in the known world, and has been estimated to produce one half of the entire mortality of the human race. How frequently, and in what numbers are the inhabitants of the warmer and more populous countries, swept off by fevers caused by the pestilential effluvia of Marshes?

The Nature of Malaria is involved in almost impenetrable obscurity and darkness. Chemists have attempted to investigate its properties, but it has eluded their efforts. They have submitted to experiment the atmosphere of Marshes which produce disease, and to their astonishment and disappointment they have found it to be as pure as the atmosphere of the most healthy districts, or of the highest mountains: in no instance was there a deficiency of oxygen or a superabundance of carbonic acid gas, or of any other chemical element detected. Chemistry, in fact, has not only failed to throw any light on this obscure subject, but it has actually

rendered that obscurity more obvious. The production of Intermittent and Remittent fevers has been ascribed to almost every single gas in its turn, and to every possible combination or mixture of gases which have ever floated in the chemical laboratory. The chemist, proud of his art, and hoping that it would become a pioneer of Medical science, could not refuse to throw in a conjecture as to the nature of Malaria: hence the motley group of gases and mixtures which have from time to time been presented to the Medical world, as the cause of Intermittent and Remittent fevers. Among those enumerated are the Nitrous Oxide and Carbonic acid gases. We need merely say that these gases have never yet produced those fevers. The Nitrous oxide gas, it is well known has been respired in a more concentrated form than it could have been produced in by Nature. The very effect of this gas is directly opposed to that of Malaria: the former is stimulant, the latter debilitating in its effects. It is surprising that Physicians or chemists should ever have thought of Carbonic acid gas, as

the cause of Billious fever; and yet there are some at the present day who advocate that opinion. Experiments have proved that it does not exist in unusual quantity in places where billious diseases prevail.

Carbonic acid gas produces effects quite different from those resulting from the application of billious Malaria: if carbonic acid were the cause of billious fever the attendants on lime kilns would never be free from that fever, nor would the companions of the Midnight lamp escape its deleterious effects.

Sulphureted Hydrogen, Phosphoreted and Carbureted Hydrogen gases have also been considered as the billious Malaria: but not one of them can be detected in the atmosphere of places where billious fevers prevail. Various other gases have been represented by different writers as the cause of billious diseases and as constituting the hidden Malaria.

Other writers there are, who wearied with the conflicting opinions of men concerning the nature of Malaria, and not relishing suspense have concluded that no such poison exists, but that billious fevers result

exclusively from heat, moisture and vicissitude in temperature. To prove that this is not the fact I need only recur to the circumstance of those fevers being intercepted in their course by a river, the temperature, weight, moisture &c of the atmosphere being the same on either side.

The opinion entitled to most respect at the present day, is that Malaria is the product of chemical agency acting upon Vegetable and perhaps animal matter in combination with heat and moisture.

A late author has doubted whether Malaria is necessarily dependant on the process of putrefaction for its existence, but considers it to arise from vegetable matter in a state of "Dissolution", by which he means the decomposition of dead organic matter, or the entire separation of its elements, these elements combining again and forming new compounds. Billious fevers often prevail where no putrefaction is discoverable: but the putrefactive process does not appear to arrest or interfere with the progress of diseases arising from Malaria.

Whether Malaria is something formed by the union of the elements of vegetable matter, it is impossible in the present state of science to say. But as it is probable that every vegetable substance possesses a principle "sui generis", upon which its peculiar character depends, it would be just as reasonable to say that Malaria is the product of these peculiar principles acting, in a state of dissolution, upon each other, or otherwise infecting the atmosphere, as to adopt any other opinion respecting its nature, which has hitherto been advanced. It has been but a short time since Chemists, in consequence of the imperfect state of their science, have been enabled to detect these peculiar principles in vegetables. Whether they are simple or compound in their nature we do not know. Chemistry says they are simple, but Philosophy declares them to be only evidences of the imperfect state of the analytic art.

We shall now briefly notice the evidences of the existence of this aerial poison, and as its existence can only be proved by its effects on the animal kingdom, we shall direct our

attention particularly to its influence on the human system.

That there is exhaled from marshes something deleterious to Man cannot, or ought not for one moment to be doubted the fact is so notorious, that unless we shut our eyes against the light of truth, unless we refuse to investigate the cause of billious disorders, and to examine into the sources whence the cause arises with unprejudiced minds, we cannot refuse to admit that Malaria does exist and that it is the product of Marshes and other situations where vegetable Matter combined with Moisture is acted upon by heat. And yet there are some, who, with the facts staring them in the face and with the evidences constantly before their eyes still positively deny the existence of any such deleterious agent. That body of land adjoining the city of Philadelphia, called the Neck, affords ample proof of the existence of Malaria. Half a century ago that tract was but little better than a great Morass. It was cultivated and inhabited only in spots. It filled the Pennsylvania Hospital with autopsies and other sequela of neglected or unskillfully treated billious affections. Death reaped annually an abundant harvest. But the scene is now changed: it is no

longer the dreaded source of Malaria; instead of a Marsh, it is now a highly cultivated piece of land; instead of poverty and want, it is now the abode of wealth and plenty; and instead of the pallid cheek and languid movements which characterized its former inhabitants, the present population presents as much of the bloom and vigour of body as belong to the healthiest of their upland neighbours.

The Pontine Marshes afford another conclusive proof of the existence of Malaria. That region was once the abode of health and happiness, of wealth and fashion. Music and mirth resounded through its groves, whilst the rich perfume from a thousand flowering and fragrant shrubs, was wafted on the gentle breeze to regale the blooming inhabitants of this once delightful spot. It was in a state of high cultivation, and so long as it continued in this condition no Malaria could be generated. But indolence and neglect have suffered the protecting vegetation to perish and instead of gardens and meadows, it is now a great waste of Marshes. What is the consequence? Instead of health and happiness, it is now the abode of disease and misery; instead of wealth and fashion, the home of poverty and grief: the

voice of Music and Mirth is no more heard resounding through its groves, but has given place to the moanings of a few wretched peasants, whose only refuge from poverty and disease is an early grave. The gentle breeze instead of wafting pleasant odours to refresh the gay and sprightly inhabitants now bears upon its wings the most pestiferous agent, producing disease and death far and wide.

The means used for protecting the inhabitants of marshy districts and other places which give rise to the production of Malaria, from disease, also afford abundant proof of the existence of this poison. If the source of disease in a neighbourhood be a Marsh, let that Marsh be drained perfectly dry, or let it be carefully cultivated, or completely overflowed with water so that the vegetable matters may be perfectly covered and protected from the action of the sun, and the progress of disease will be stayed. If the source of disease be along the fertile banks of a river, let trees and bushes be planted so as to intercept the Sun's rays and afford a protecting shade: for it is a well ascertained fact that unless the moist vegetable matters be exposed to the action of the Sun, no Malaria

can be produced. Other arguments of a similar nature may be advanced in proof of the existence of this poison, as, its being absorbed in its passage over water, an evidence of which fact is that the inhabitants of one side of a river may be suffering from this cause, while those of the opposite side are free from disease. Billious fevers may be raging along the banks of a river and a ship may be lying in the stream a cable's length from the shore, but provided she be kept clean, the crew will be free from fever, but if any of the crew be permitted to visit the shore, they will suffer from the prevailing disease: showing that there is something generated on shore producing disease, which we call Malaria and which cannot pass over water in a concentrated form, in consequence of the mutual attraction existing between these two substances.

The effects of this aerial poison on the Human System are truly deplorable. The inhabitants of marshy districts seldom attain the proverbial limit of three score and ten years. In Holland the average of human life is but twenty five years; and there are districts in France where it is but twenty two, twenty,

eighteen, so little is the chance of life, while the principal, nay, almost the sole agent by which Death here executes his office is Malaria.

Dr. John McCulloch, in his interesting essay on Malaria observes, "That the residence of successive generations in a district of this nature produces a degeneracy of the races, is amply shown in various parts of France, and Italy, and never more distinctly than when the inhabitants of the marshy plains and vallies come into immediate contact with a people of the same radicle origin and race inhabiting the healthy, mountainous or hilly tracts which bound or include them. The stature not only becomes reduced, but deformities are frequent; while anatomically, the bones are found to be affected, their extremities in particular being unusually large and spongy and rickets as a positive disease being also an implicated consequence."

The colour of the skin, and the general aspect of the inhabitants of Malarious districts cannot fail to attract the attention of the most cursory traveller. The sallowness or yellowness of the skin, wrinkled even at an early

age; the dull languid and very often yellow eye; the enlarged abdomen rendered still more conspicuous from the slenderness and emaciation of the limbs, all sufficiently indicate the nature of the place where these unfortunate beings are doomed to drag out a miserable existence, and where life is but one continuous thread of disease and wretchedness.
An enlargement of the liver and spleen is a frequent occurrence in these districts; while an investigation after death discovers various lesions in these organs and in the mesenteric glands.— The condition of the mental faculties, whether intellectual or moral, is scarcely less remarkable, and affords a striking proof of the power of Malaria in embittering all the enjoyments of life which a beneficent Creator has placed within the reach of man— The countenance is expressive of unhappiness, stupidity and apathy. An habitual melancholy, which nothing can dispose, hangs over their minds; and in point of feeling, it is said, they are scarcely elevated above the brute creation. Being deprived of the power to enjoy amusement and

society, they shun both, and seek the gloomy shades of solitude than to linger out the remains of a wretched existence. That the general intellectual faculties are degraded is a universal remark; while in the Maremma of Tuscany it is observed that absolute idiotism is common.

The moral condition of the inhabitants of those unhealthy districts is no less deplorable, if we can believe the reports of writers on this subject. Whether these effects be owing to disease, or its cause, alone; or whether they are the consequences of other circumstances, unconnected with disease or its cause, acting as an additional agent in their production, is yet to be questioned. Abortion, infanticide, universal libertinism, drunkenness, want of religion and gross superstition, are enumerated as the leading features; and it is said, and even proved by the police reports, that while murders are common, a large proportion of them are premeditated and cautious, being effected by poison or otherwise clandestinely; all the vices being of a mean and not of a bold character. Such is the

degeneracy, both of body and mind, of those races which a combination of unfortunate circumstances has doomed to linger in countries that seem to have been intended rather for the haunts of reptiles and insects, than for the habitation of man.—

In the list of those diseases which are the product of Malaria, Fever, of an almost endless diversity of character in different circumstances, holds a conspicuous rank. It is the sword wielded by the hand of the destroying angel, Malaria, which spreads desolation over all the earth.— The mildest Intermittent, and the most Malignant Bilious Fevers are alike produced by this Malific agent.

Besides these Fevers and their various modifications (too numerous here to be mentioned) there are many other diseases produced by Malaria. a few only of which we will enumerate.

Dysentery, Cholera, and Diarrhea, are frequently the result of Malaria. the mortal power of the two former diseases, and the distressing effects of the latter are too well known not to receive their due share of attention.

Visceral obstructions and dropsy, constitute an important class of diseases arising from this cause. There is another denominated Neuralgia, a generic term, the cause of which has been a subject of great doubt, but which is now attributed by many writers to Malaria. The most common form of this disease, or that most generally known is the Tic Douloureux, one of the most painful and inveterate diseases of the whole class.

Dr. Macculloch in speaking of this affection, observes "An attention to this subject for a very long course of years, has proved to me that, from whatever other causes it may sometimes arise, it is one of the disorders produced by Malaria, and that moreover, it is very often a mode of intermittent fever: a chronic disease of this nature, attended by a peculiar local affection." The analogy of this disease to intermittent fever, of which it is considered a modification, affords just and reasonable grounds for believing them both to proceed from the same cause. They prevail at the same season, in the same situations, and often affect the same individual at one time. There is a

case cited which may be brought forward to prove this fact: it is one out of many which have been observed. "In this case the situation was so decidedly subject to Malaria, that scarcely an individual out of many different families which had resided in it, had escaped intermittent at some period of their stay. In one season, and in one family consisting of twelve or fourteen persons, the following were the effects in as many individuals. One, tertian: one, double quotidian headache: another, tertian: one, diseased spleen: in one person aged eighteen, a temporary hemiplegia with obscure quotidian: a second case of palsy in one leg in a person of twenty with obscure quotidian, and symptoms of diseased spleen: a regular Neuralgia of the face of double tertian type. – In a following distant season, and in some of the same persons, there occurred palsy of the face with imperfect speech an attack lasting beyond a week and displaced by quotidian Neuralgia of the face: a double tertian common intermittent terminating in a quotidian or double tertian Neuralgia: a quotidian with

neuralgia in the shin bone". Thus we see a variety of forms of disease, all appearing to be connected together, and originating from the same cause. That neuralgia and intermitting fever are intimately connected with each other, will be more manifest from the fact that the paroxysms of the former, like those of the latter disease, occur periodically. Neuralgia also exists in alternating paroxysms with simple intermittent; or a particular double type will consist alternately of a paroxysm of pure fever, and a paroxysm of Neuralgia. They admit of the same general and constitutional treatment for their cure: those remedies which are proper for intermittents, being generally useful in Neuralgia, and on the contrary those which are injurious in the former are also injurious in the latter disease. Malaria, however, is not the exclusive cause of neuralgia; local injury of a nerve, or diseased bone through which a nerve may pass, is a frequent cause of this disease. It also frequently arises from carious teeth, the extraction of which is then the proper remedy.

I have thus endeavoured to trace the general effects of Malaria upon the human system, although I have not taken so extensive a range as this part of the subject admits. It is probable that many diseases, the causes of which are yet involved in obscurity, may hereafter be traced to Malaria.

Whether the different diseases arising from this cause, depend on the peculiar condition of the system alone, or whether they be owing to a difference in the quantity or concentration of the Malaria, or to a difference in its constitution, has not been satisfactorily determined. It is very probable, however, that the particular form or type of the disease does not depend upon any difference in the constitution of the Malaria, but upon its quantity or concentration, and upon the particular predisposition of the system acted upon.

The cause of Yellow fever is produced from the same sources as the cause of ordinary Remittent and intermittent fevers: but Yellow fever seldom occurs under a range of temperature below 80°: here the excessive heat produces a predisposition in the system, to disease,

and at the same time generates a more highly concentrated poison; consequently, this highly concentrated poison acting upon a system already worn out by the excessive stimulus of heat, instead of the ordinary remittent, produces that form which is called yellow fever.

Dr. Caldwell, speaking of the yellow fever of Philadelphia in 1803, says, "as the fever receded from the low grounds and malignant atmosphere of Water street, it became more and more mild and manageable, till its evanescent shades in Second street were in many instances much lighter than the common remittents of the country." The source of the cause of this fever was in the immediate neighbourhood of Water street, and the cause, there, was in a sufficient state of concentration to produce Yellow fever: in Second street the cause was the same, and was derived from the same source, consequently it could not be different in its constitution; yet it did not here produce yellow fever, but the mildest remittent, shewing that the form or type of the disease depended not upon any difference in the constitution of the cause, but upon a difference

in its concentration.

With regard to the medium through which Malaria gains admission into the system, there exists much difference of opinion among medical men.

In the discussion of this part of the subject, the following questions present themselves

1st Does Malaria operate through the nerves of the skin?

2nd Does Malaria operate through the nerves of the stomach?

3rd Does Malaria operate through the nerves of the lungs?

4th Does Malaria enter the circulation, and being conveyed throughout the system, does it act on all the nerves alike or upon any particular set of nerves?

To the first question I cannot answer in the affirmative. The absorbing power of the skin, unaided by friction, abrasion or ulceration is very feeble; and even were it possessed of the power of absorbing Malaria there is so small a portion of its surface exposed

that the quantity absorbed would be too small to produce much effect.

The second question may also be answered in the negative. But there are some, who contend that it does act primarily on the stomach. It is asserted that the Miasm becoming entangled in the saliva and swallowed with this fluid into the stomach establishes a primary morbid impression in its delicate mucous membrane. In confirmation of this opinion it is said that the stomach possessing a very extensive circle of sympathetic relations, and being highly sensitive to impressions, is peculiarly calculated to become the primary focus of morbid excitement from external morbific agents. It is affirmed, moreover, that the initial symptoms of fever point out the primary influence of the febrific cause on the stomach: the loss of appetite, the nausea and vomiting, and the peculiar sense of uneasiness in the epigastrium, are considered as affording strong evidence of the correctness of this opinion.

In answer to these arguments it may be said that

it is very improbable that a sufficient quantity of Malaria could be entangled in the saliva and swallowed with that fluid into the stomach, to produce disease. If this morbific agent did act through this medium, chewers of Tobacco should be comparatively free from the diseases of miasmatic districts: but this is not the case: we find that they are no less subject to these diseases than others who make no use of the article whatever, and that sometimes its use seems rather to facilitate the morbific agency of this gas. As to the evidence drawn from the character of the premonitory symptoms, it does not, neither can it afford any available support to this doctrine. Any cause capable of deranging the healthy condition of the system, acting upon any part of the body, may produce the same morbid symptoms in the stomach. The loss of a quantity of blood, a blow upon the head or other parts of the body, will give rise to nausea, vomiting and immediate loss of appetite; shewing only that the stomach in common with other organs

receives the impression of any morbific cause acting with a sufficient degree of intensity on the general system.

Rejecting therefore the opinions that Malaria acts either through the medium of the skin or the stomach, let us proceed to the third question, Does Malaria operate through the nerves of the Lungs? And to this I confess my utter inability to give a positive answer. The nerves of the Lungs are not calculated to receive the impression of any morbific agent, any more than the nerves of any other part of the system; and yet the inhalation of certain effluvia will produce disease whereas if the matter of those effluvia be taken into the stomach, the nerves of which are so highly sensitive, no such consequence will ensue. I do not deny that the poisonous effluvia may act directly on the nervous extremities in the Lungs, but the fact mentioned certainly does tend powerfully to strengthen the opinion that the nervous extremities in the Lungs are very feebly, if at all acted upon by certain effluvia, and that there must be some other medium through which these effluvia

gain admission into the system to produce disease: and this leads us to the consideration of the fourth question viz Does Malaria enter the circulation, and being conveyed throughout the system, does it act on all the nerves alike, or on any particular set of nerves? Two distinct propositions are contained in this question it will be therefore necessary to separate them and enquire first Does Malaria enter the circulation? To this I unhesitatingly answer in the affirmative. The bronchial cells expose a very extensive surface to the intromission of gaseous substances, and there can be no doubt but that many of these substances pass through into the blood, and through this medium act upon the system. That agents of this kind are taken into the circulation through the medium of the Lungs, may be inferred from a number of facts in relation to the inhalation of odoriferous effluvia. The inhalation of the fumes of garlic, of turpentine and of various other substances of a similar character, is speedily followed by the manifestation of these odours in the urine. The extraordinary

effects which arise from the inhalation of nitrous oxyde, and of the vapour of sulphuric æther, can be accounted for only in this way: for it does not seem probable that these effects are produced by the mere impression of these causes on the pulmonary nerves; for when these substances are taken into the stomach, the nerves of which are so highly sensitive the same consequences do not ensue. The experiments of Magendie in relation to the effects of putrid effluvia, also tend to confirm the opinion that these gaseous substances pass into the circulation. On exposing animals to the inhalation of putrid effluvia, some became rapidly emaciated and died, at different periods, within twenty days. When however, the putrid substances from which the effluvia emanated, were taken into the stomach they gave rise to no apparent deleterious effects.

The Small Pox virus may also be swallowed, and yet it will not infect the system. but let the effluvia of Small Pox be inhaled and the disease will soon manifest itself in the system.

These facts go to prove that substances in a

gaseous form, when inhaled, do pass into the circulation, and there are no good grounds for denying that Malaria may produce its deleterious effects through the same avenue. But there is an objection urged against this opinion which is this viz. "that if Malaria enter the circulation, the blood should exhibit evidences of the presence of this agent." It is very probable that if the analytical art were complete, we should be able to detect its presence in the blood; but if we cannot detect this gas in the atmosphere, the analysis of which is apparently perfect, how can we expect to detect it in the blood, the analysis of which is far more difficult and complicated? It is a well known fact, that Malaria being conveyed over water by the wind, is absorbed in its passage: but what evidence have we of this? there is no perceptible change in the water produced by this gas; if the water be analyzed, no Malaria is found; shall we conclude then, that because our feeble senses cannot detect this gas in the water, it does not exist there? Certainly not. We know that

it does exist in the water, and the evidence we have of this fact is, that a body of water always impeds the further progress of the prevailing disease: thus, if there be a marsh a short distance from the shore of a body of water, the inhabitants of the intermediate space of land will be suffering from the marsh fevers, but the disease extends no further. It prevails all along the shore, but the cause of the disease is absorbed in its passage over the water, hence the inhabitants of the opposite side of the water remain perfectly free from the direful effects of this noxious agent. The objection then wants validity: it is the most unreasonable and futile one which has ever been advanced. It is however the opinion of some very respectable authorities that the presence of this poison in the blood, does effect a perceptible change in that fluid; but they differ very much as to the particular appearance which the blood presents. There is no doubt but that each author on this subject has accurately described the appearance exhibited by the blood which he examined; and the only way

in which we can account for the variety of appear-
-ances presented by the blood of different persons,
whose systems were under the influence of Malaria,
is, that the cause had not been acting the same
length of time upon each individual system, when
the blood was drawn. The peculiar appearance
of the blood I conceive not to be owing to the imme-
-diate or direct agency of the Malaria upon that
fluid, but to a primary morbid condition of the
solids of the body induced by the operation of
this cause on the nervous system through the
medium of the blood. This morbid condition
of the solids may exist in so small a degree
as not to give any expression of actual disease;
the functional system may be slightly impaired
and the blood if drawn at this time, may exhi-
-bit the appearance attributed to it by authors.

Holding therefore to the opinion that Malaria is con-
-veyed throughout the system by the blood, let us enquire
in the second place whether it acts on all the nerves
alike, or on a particular set of nerves?

When we look over the history of Medical Science, and more particularly as it regards the subject of fever, our attention is first strongly directed to the vacillating opinions which have from time to time been advanced by different authors. Numerous theories of fever have been given to the world at different times, and each has, for a while, attracted its host of worshippers. They have each had their day to strut upon the stage, and have then sunk into oblivion, or are only remembered as evidences of the unsettled and imperfect state of Medical Science. But as the human Mind is constantly verging towards truth, so we find that almost every theory of fever has been of essential service, by divulging some important truth, or in exposing the errors of those which preceded it.

It is now generally admitted in all hands that Malaria is a cause of fever; but with regard to its modus operandi in producing fever, there is still great diversity of opinion. The views of Hoffman, who believed that fever consisted primarily in

"diminished energy of the nervous system", seem to have been generally adopted by most pathologists. This, perhaps, is nearer the truth than any other theory which has been advanced. But it is open to many and strong objections, some of which will be noticed in the sequel. Others refer the source of fever to the inflammation of some particular organ or organs, among whom is the celebrated Broussais, who contends that the cause operates primarily on the mucous membrane of the alimentary canal. It is not my intention here to offer a theory of fever, but merely to specify the particular part of the human system on which Malaria produces its primary morbific impression. Concerning the essential nature of its action, however, it is in vain to enquire: all the information which seems to be attainable, in relation to its Modus operandi, is confined, perhaps, to a knowledge of the organs upon which it primarily acts. The opinion has been advanced by some, that, upon whatever part of the system Malaria acts, its primary effect is that of

a stimulus; while others, with equal confidence assert that its primary effect is debility. The most plausible and reasonable opinion on this subject however, I conceive to be that it produces neither essentially a stimulating or debilitating effect primarily, but an altered and diseased action; and this altered and diseased action is not the consequence of an impression produced by Malaria on all the nerves alike, but on a particular system of nerves, viz: the Great Sympathetic.

That this position is correct, I infer

1st. Because fever consists in a perverted condition of the capillaries.

2no. Because these capillaries are under the control of the innervation they receive from the Great Sympathetic.

3no. Because when the innervation which the capillaries receive is rendered abnormal, the functions of the capillaries must be thrown into a morbid state.

With regard to the first proposition, that fever consists in a perverted condition of the capillaries, there can be no possible objection. By the capillaries, I mean those minute vessels which perform the functions

of secretion and nutrition. The regular performance of these functions is indispensable to the preservation of that equilibrium which we denominate health: indeed disease is nothing else than deranged function. It is by these vessels that the human fabric is built up and supported, and were they once to cease their actions, this beautiful frame would soon lose its characteristic vigour, and fall into decay and death.

When we closely examine the forming stage of fever, we invariably find the functions of the capillaries to be deranged; and this derangement of their functions always precedes the morbid symptoms, which are only the outward expressions of the condition of the organs within the body.

"To the diminished energy of the nervous system," says Dr. George Gregory, "we ascribe the languor, lassitude, loss of appetite, general uneasiness and pain in the back, which mark the invasion of fever. The functions of the Brain not being as yet thoroughly understood, it is doubtful whether or not we are authorized in attributing to the same source, the

diminished and depraved secretion which occurs in fever".

In this view of the subject the cause of fever is supposed to produce primarily an impression on the nerves of the part to which it is applied; and this impression being conveyed to the brain, produces a debility of that organ, which in its turn transmits or radiates the same impression throughout the system, thus giving rise to the symptoms enumerated above, as languor, lassitude &c. It cannot be denied that debility of the brain is produced by the operation of the cause, but the explanation of the manner in which it is produced is altogether unsatisfactory. How can a cause the presence of which gives rise to no sensation, act upon a sensitive nerve (and this nerve convey an impression to the brain, producing debility of that organ) without first producing a derangement in the functions of the capillaries, upon whose healthy action the energy of the brain, as well as that of every other organ in the body depends?

Moreover, admitting debility to be the consequence of the operation of malaria, yet debility is not disease,

for so long as the vital properties retain their natural state, all irritants or stimulants can produce only a greater or less degree of normal excitement. As soon however, as these properties have departed from their healthy condition, every stimulus, whether natural or morbific, must necessarily excite morbid actions.

"The functions of the Brain," says Dr Gregory, "not being as yet thoroughly understood, it is doubtful whether or not we are authorized in attributing to the same source the diminished and depraved secretion which occurs in fever." The Author's doubts, expressed in the above sentence, sufficiently indicate that the theory of fever which he had adopted was far from being perfectly satisfactory to his ingenious and philosophic mind.

Modern physiologists, indeed, have all agreed in the opinion, that the function of secretion does not depend on the brain: consequently the depraved secretions which occur in fever cannot be attributed to this source.

No one will deny that in fever the functions of secretion and nutrition are disordered, and as fever

is a general disease, these disordered functions must exist in every part of the body. But I cannot conceive the propriety of Dr Southwood Smith's arrangement in placing the derangement of the functions of secretion and excretion <u>last</u> in the series of fever. How is it possible that these functions can be going on in a healthy manner, and continue so, untill after the derangement of the functions of the brain and spinal marrow, and of the circulating system shall have been effected? This cannot be. I must confess that it is altogether unintelligible to me and therefore I cannot adopt it.

But if the proposition laid down above, be correct, that fever consists in a perverted condition of the capillaries, then it appears to me that the explanation of the phenomena which occur in fever is at once satisfactory and intelligible; and that instead of this perverted condition of the capillaries being the last, it is invariably the first in the series of fever.

The first symptom enumerated in the forming stage of fever, is a loss of mental energy. This does not consist

in merely a weakened condition of the brain; but its vital properties are essentially deranged. If it were only a debility of the organ, stimulants would constitute the only proper remedies, and their action would be confined to the production of an increase of normal excitement. but the vital properties of the brain being essentially altered, all stimulants necessarily excite morbid actions. This affection of the brain consists particularly in indistinctness and consequent confusion in the trains of ideas; in inability to attend to their relations; and, as a necessary result, in the loss of the power to think clearly. The individual feels that he is not in a state to form a sound judgement on any subject. If the energy of the brain depends on the healthy function of the capillaries within that organ (and that it does, cannot for a moment be doubted) I can readily conceive why the above condition is produced by a primary morbid affection of these vessels. Their action does not afford the usual healthy stimulus to which this organ is accustomed: their vital properties are deranged

and the brain, as a necessary consequence falls into a state of debility and disease.

On the same principle may be explained the loss of energy in the muscles which takes place at or about the same time, that the affection of the brain, as well as that of the spinal marrow, occurs. The vessels of secretion and nutrition belonging to these organs, being impaired in their functions, they are no longer capable of imparting to the muscles their usual supply of nervous influence; hence lassitude is the result. That state of the system which is called febrile uneasiness next occurs. The patient, though not suffering absolute pain, is restless and uneasy; he can not confine himself to any one position: here it is evident that the functions of secretion and nutrition are deranged. If we examine the tongue, we will find that it presents evidence of morbid secretions. The secretions of the alimentary canal also exhibit an unhealthy appearance: the functions of the stomach, as well as those of the skin, are deranged: in fact there is a general disorder of every secreting organ and tissue in

the whole body. They are however unequally affected sometimes one part, and sometimes another being disturbed more than the rest, according to the predisposition of the different parts.

Having thus endeavoured to shew that fever consists in a perverted condition of the capillaries, and that this condition is invariably the antecedent of all the morbid symptoms attending fever, we proceed to the consideration of the second proposition, viz: That the capillaries are under the control of the innervation* they receive from the great Sympathetic.

This part of the subject need not detain us long. Modern Physiologists have by their experiments on the nervous system, and by the discoveries which have resulted from their experiments, opened a brilliant path which may perhaps at some future day, lead to further discoveries in Physiological science, now thought far beyond the reach of human power to attain. It is now universally believed, and I may say proved, that there are four sets of nerves in the system. These are

* See note on the reverse side.

X. There is, in the human system, an apparatus which appears to preside especially over the different vital actions, and to be the source of those various phenomena of sympathy and mutual cooperation without which there could not be a living whole. This is the <u>apparatus of innervation</u>: and the term, <u>innervation</u>, merely expresses the unknown power or force, residing in this apparatus, which is exerted every time a vital action takes place.

1st The nerves of voluntary motion.

2nd The nerves of sensation.

3rd The Respiratory nerves. and

4th The Great Sympathetic.

Each of these sets of nerves must have an office peculiar to itself: and however they may be connected together and unite their offices for the preservation of the whole system, yet they are each one distinct from the other, having separate and distinct functions to perform. Thus, the nerves of voluntary motion do not preside over the capillaries, for if this were the case, we might, at will, regulate or modify their function. The nerves of sensation do not preside over the capillaries, for then the mind would be conscious of every phenomenon which takes place in the process of nutrition and secretion throughout the body. No one can be so mistaken as to imagine that the Respiratory nerves supply innervation to the capillaries. I conceive it altogether unnecessary to enlarge on the three foregoing propositions: their correctness certainly cannot be denied. Therefore

as a matter of inductive demonstration we must conclude that the capillary system is governed by the Great Sympathetic. We may also sustain this position by reference to the Anatomy of this nerve.

1st Its intimate connexion with the arterial system.

We find numerous branches of this nerve coming off from the various plexuses formed in the system, particularly in the abdomen, entwining themselves round the arteries and following them throughout their course, evidently for the purpose of presiding over and governing their functions.

2nd The manner in which its filaments lose themselves in the coats of the arteries.

It is true this nerve cannot be "traced" by dissection throughout the course of the arteries to their minute ramifications, but it is evident that if the arteries in one part of their course receive their nervous power from this system of nerves the same system of nerves must supply their extremities. These nerves become intimately mixed or interwoven with the coats of the arteries, and thus follow them to their minutest ramifications.

indeed the capillaries are more abundantly supplied with filaments from the Great Sympathetic nerve, than are the trunks of the arteries. This certainly would not be the case were not these vessels under the immediate control of this system of nerves.

3rd The great number of filaments which go to the various organs whose office it is to perform secretion.

Every secreting organ in the body is abundantly supplied with filaments from the Great Sympathetic. The liver particularly receives numerous filaments from the coeliac plexus. The vena portæ receives its peculiar property of secretion from this nerve: in like manner every secreting organ in the body receives its share of nerves from this ganglionic system, enabling it to perform those important functions in the animal economy, which, for wise purposes, are placed entirely beyond the control of the nerves of animal life.

The capillaries being under the control of the innervation they receive from the Great

sympathetic, it necessarily follows, in the third and last place, that when the innervation which the capillaries receive is rendered abnormal, the functions of these vessels must be thrown into a morbid state.

We have defended the opinion, in the foregoing pages, that Malaria enters the circulation. The moment the blood receives this morbific agent, it is distributed throughout the whole capillary system. It must then happen that the whole apparatus of innervation which is associated with the capillaries, will suffer from the impurity of the blood. Being thus thrown into a disturbed condition, and no longer able to supply healthful innervation to the capillaries, these vessels must also become perverted in their actions. This gives rise to, and satisfactorily explains, all the phenomena of fever.—

I have thus endeavoured to trace the connecting links between causes and their effects,

imperfectly indeed, because even did the limits of an Inaugural Dissertation allow more latitude to the interesting subject I have chosen, yet I feel that my footsteps have not yet penetrated far enough beyond the vestibule of Science to permit the hope of throwing much light on a matter which has engaged abler and older heads than mine. Nor would I submit these crude thoughts, were it not in obedience to the requisitions of the University, of which it will be my pride to call myself an alumnus.

—— " ——

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to the consideration
of the
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and
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of the
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by
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of
Prince George County
Md.

Baltimore March
1837.

To Robert W. Harper M. D

It is more from a disposition of the mind, and feeling of the heart, than, from a mere sense of duty, that, I ded=
=icate to you, the first fruit of the Medical Education, I received under your friendly instruction; The profes=
=sional information, and the great civility, I received from you; render it impossible for me to determine whe=
=ther you are more entitled to my esteem, as a preceptor or to my gratitude as a friend, so fully have you discharged the duties of the one; and so kindly have you indulged in the feelings of the other, towards me, that, it would be making an ill return, not to express the deep sense I enter=
=tain of your admirable qualities. Accept then I beg you my unfeigned thanks, for the politeness you have shown, and the services, you have rendered me.

Believe me to be with every sentiment of gratitude and esteem

Your friend and pupil

Richard W. Bowie

Introduction

In this essay it will be my endeavour to describe as accurately as possible the symptoms and treatment of a species of Measmatic disease, that, prevailed for two or three autumns past in the county, in which I reside; If I have succeeded in so doing it is all I desire ——

some description of what is demominated congestive form of fever, may be found in the ancient Records of Physic notwithstanding. It has not elicited, that, scrutinizing eye of Physiological reasoning, and Pathological research, which the importance; of a disease of this character seems to require Hippocrates mentions, internal accumulations of veinous, blood; without the increased excitement, which marked the causus, or burning fever; Sydenham speaks of one in which the surface was cold, and nature so much oppressed; as not to be able to produce regular symptoms of fever, Among modern authors Doctor; Armstrong has the merit, so far as I know), of having surpassed his predecessors in the correctness and fidelity; with which he has described, congestion, in its various stages; for though his description is confined to Typhus; it may with much propriety be applied also. To Bilious diseases. In vol. 33rd Med. Rec. Doctor Cartwright mentions a species of bilious fever, which, bears a faint resemblance to the one, which, I have attempted to describe for says he "the head and breast were burning hot; the temporal arteries throbbing violently, the pulse of the wrist scarcely percep=table on placing the hand over the abdomen a strong pulsation could be felt; The patient became more

restless, and complained of more paind, in proportion as the fever spread over the system; at length the partial fever, passed into a general stage of excitement constituting the second stage" He likewise mentions extreme irratibility of the stomach as a prominent symptom This brings on a wider range of things and ushers me into the consideration of a matter, more, obscure in its nature, extensive in its bearings; and of the utmost importance in its consequences. I mean the importance of the liver and the effects of a vitiated heat or atmosphere on its functions — Physiologists have from the time when the science first emerged, from the visionary ideas, of speculation; represented, it as a colossol apparatus, of Hercuean power. When we take into consideration, its magnitude, its situation, its connections sympathetically, with, every organ, in the body; it may with propriety be considered, the centre of some opperation, of vast importance in the animal system; its abundant supply of blood, from venious sources; and this derived principaley, from digestive organs; we are led almost to believe; it performs an office more important, than, is generally assigned it — The organization of the liver, has been examined by anatomists, and the bile annalized by the chemist: into its elementary parts

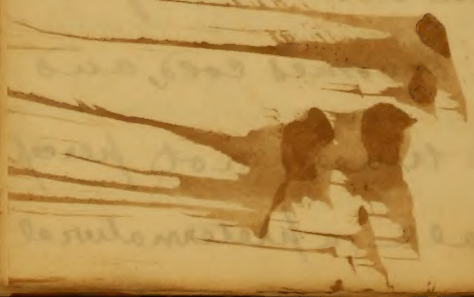
yet Physiologists have not agreed generally as to the purpose, it answers in the System; it is says Dr. Johnson "proven to be antiputrecent, and in conjunction with the pancreatic juice; it probably assists in anamalizing the chile, from the chyme;" it is the tonic of the intestines & purges, from them the irritating faces: the Remora of which would produce serious consequences; Etiology there are few Pathologists that have not with one voice and common consent, admitted, the pernicious, effects, of a contam=inated atmosphere, on the human system. But the modus operandi remain yet open for speculation; and is in fact; more a matter of theoretical disquisition; than, of practical importance. The theory of Broussais which has met with many advocates, and some opposers among the profession. I think is objectionable and destined, to be of short duration; when completely reduced to practice; That malaria acts primarily; on the mucous membrain of the Stomach, and intestines, and there producing Gastro Enteretis; is not supported by pathological Phenomena; or verifyed by observation: That gastro Enteretis does frequently exist in bilious affection I do not pretend to question; when it has been

contestably proven by such respectable patholog-
ists as Broussais, and many of his Proselytes, found
ed on post mortem examinations; But may not
this inflammation be the effect of some morbid
cause located in some other part or tissue; and
avoid the sweeping conclusion; of its being the
fons et origo of all mischief; Another objection
as I conceive, to the Physiological doctrine, is that
Malaria existing, in such minute gaseous state, as
to avoid, the most delicate test, of the Chemist
should be decomposed in the mouth, and
the cause of disease; passing directly to the stom-
ach for a tissue, to act on. Is I think visionary
and predicated; on erroneous principles.
If a mucus tissue be the only one subject, to action
of Malaria, why does it not act on the Scride
ian membrane, or the mucous membrane & bronchia,
lining the mouth and
fauces, for their physical properties are the
same, But a theory more rational is the one
proposed by D. Clutterbuck and improved by
the Professor of theory and Practice in this
institution; that the impression is first made
on the brain and nervous system through the

medium of the Lungs for if an individual be exposed to influence, of a vitiated atmosphere, he begins to exhibit symptoms, of diminished energy in nervous system; Pain and fulness in the head want of appetite evinced, by the various feelings which usher in the cold stage of fever — The force of the heart and arteries appear. to be weakened; and consequently an incapacity, to propel to the surface and the secreting organs; and from the diminished excitement of the system; a quiescent state, of the capillarys; and shrinking; and coldness of the external parts — In conjunction with this predisposing cause of Disease, a poor diet, grief, disease, long protracted mental anxiety; continued exercise either mental, or corporeal; depressing passions; imprudence, in eating and drinking; exposure, to vicissitudes of weather; The most remarkable is, the prevalence, of an easterly wind, and exposure to night air, the last of these is highly important, in a prophylactick point of view. Doct. Johnson whose opportunities of knowing were very extensive, lays much stress upon it; He

"He urges the danger of sleeping, or remaining, all night in anguish, or low situations". all these aid, in the productions of this disease, acting on the system predisposed by the action of malonie; and that torpid of the Liver is the principal cause in the production; I infer from the following circumstances, Diagnostics — The first attack, of this fever many times seems to partake, of a bilious remitting Cholera — Sometimes we are led to believe, intermittent (of writers by its returning at stated periods) which typhe, of fever may be questioned on pathological principals, because if a patient be examined, at any time in the supposed intermission a marked difference, between, the circulation and iratability will be obscured — Sometimes the pulse is two full & quick at another period the reverse, often in the supposed intermission the Skin is too warm and dry, at times the situation different — Thus it is not absolutely necessary to constitute fever, that we should have a preternatural heat of the Skin, together with an increased action, of the heart and arteries. but it is a morbed action, one deviating from a natural State, The veinous system is more intimately and chiefly concerned in the phenomina of congestive & the arterial inflamatory bilious — In the simple excitive & inflamatory forms of bilious. the action of the Heart and arteries

are increased; but in the congestive form it is diminished
This difference in the arterial action together with the high
temperature of the former and the low temperature of the
latter constitute the most distinguishing characteristics be=
tween diseases of excitement and those of congestion. The
exciting cause of congestive fever seems to act with increas=
ed force on the nervous System and the heat of the surface
being reduced, the blood recedes, from, the external to the
deep seated veins. in consequence of the inadequate powers
of the heart, to propel the blood through the general System.
Symptoms — In some attacks the disease is ushered in with
all the symptoms, of a chill, quickly succeeded, with
considerable nausea and vomiting; of yellow bile.
An incapacity to retain any article, but of the most
stimulating kind and sometimes the celiac ganglion
is so much impaired, as not to act at all or imperfectly
a peculiar susceptibility, of the intestines to violent
Hypercarthesis, being deprived of their usual tonic-fin
the dejections of the appearance; of that which is evac=
uated from the stomach, and if suffered to continue, soon
alters in appearance, like unto (water into which fresh
beef has been washed) the surface becomes cold, and
relaxed, the pulse at the wrist, at times, not percep=
=table or exceeding soft, and small, a preternatural



hersperation soon follows differing naturally
e feel and smell from natural persperation and which
I think is a morbid secretion believing it impossible that it
ould, be healthy, when the blood has receded from the parts
wherein it is illuminated— Sometimes the attack is much
lower, evinced by broken excitement at times, attended
with perspiration, at others without an unnatural coldness
of the extremities; particularly a long the wrist, & Legs. The
balms of the hands, and bottoms of the feet warm and
sometimes burning hot— The face is flushed or of a leaden
hue, the eye suffused or muddy and very sensative, the
ongue, at first not much changed afterwards coated with
irty fur, with papilla red like, small coral, along the
ides, and at the lips cleanred; it is also flabby & tremulous
enitus aurium, pain & fulness of the head, not confined to any
articular part; but most frequent to the forehead, and
verter, also, pain in the small of the back, great pros=
tration of physical strength, Sometimes numness of the
limbs, advancing so far in some cases as to amount —
o paralysis— Dispeptic state of the stomach attended
with great flatulence ;— pain along the points of the
alse ribs shewing some spasmodic affection of the dia=
phragm; at times the patient complains, of great interna

heat and tightness about the precordia the bowels painful, sometimes torpid, and at others irritable, bobrygma, of the stomach and bowels, is also a symptom the urine pale at first and scanty; as the patient recovers it becomes high coloured; cough is a common symptom. this sensibility of the surface, is so much obtunded; at times; that, if blisters are applied, they act not at all or imperfectly. The articulation is slow drawling and imperfect; respiration anxious attended with sighing. Pulse low frequent and intermitting, or soft unresisting and variable. Thus when we observe such a marked and morbed difference in the circulation and such unequal distribution of animal heat continuing for such a length of time, it is prima facia evidence some organ is seriously oppressed no outlet being furnished for the vital fluid; an engorgement or congestion must necessarily somewhere exist and from the symptoms, and evacuations, and the orginization of the liver, and peculiar physiolcigy of the vena portae it is most probable it first takes place there, being the only vessels in the body begining and ending in capillary vessels. the next organs most liable to those almost stagnant accumulations of blood are the brain and lungs. then we have great jactitation coldness of the surface

Thus the Symptoms progressively advance unless relieved to a dangerous point destroying the patient in a short time.

Treatment

The first thing which arrests the attention of the practitioner when the patient is found labouring under the symptoms first described. Is to allay the extreme irritability of the stomach, to equalize the circulation by soliciting the blood to the parts from which it has receded and to restore if possible, the last animal heat. The first of these, as well as the latter, are to be attempted by the extensive application of sinipisms, and stimulating frictions, the operation of Cpespasticks being too slow to be exclusively relied on; in cases of such emergency Hot cloths will sometimes be of service; Spt Teribinthini used both externally and internally, is highly useful & proper from the permancy, of its stimulating virtue; Mercury is of great importance if there be vitality enough to promote its operation; from its great power in equalizing the circulation, and promoting the secretions. We should never dispense with this remedy as its virtues will sometimes surpass, our most sanguine expectations. Yet while using those remidies. We are by no means to desist

from the administration of others of great consequence; I mean those which have a direct action, on the labouring organ, As soon as the irritability of the stomach shall be a little quieted, which can be effected by Tinc Opii. on a sinepism over the stomach; a full dose of calomel combined with opium should be administered; this is given with a twofold purpose. First to prevent a return of vomiting and to allay irritation. The second to act on the liver, when the evacuation will be changed from thin watery bile; to dark gruminous offensive passages. it is necessary likewise to administer enamas to aid the operation. The patient will acquire additional strength from each operation of this character defusable stimulant should be used with caution if the pulse rise and acquire force by this practice may be persevered into a limited extent; but should they not produce this effect they are of serious disadvantage by deteriorating and finally destroying the excitability. Sometimes reaction comes on with some arterial force. then topical or general blood letting may be used with sucess: according to the parts most depressed. The coolness of the surface and smallness of the pulse which Dr Rush mentions

in yellow fever did not alter his regular routine of practice without calling in question the abilities which suggested; and the succes which attended this mode of practice. I feel fully confident that general use of the lancent in this disease would certainly prove detrimentab. There appears to be this difference between the disease of Dr. Rush and ours the former is a disease of an inflam=atory state of the system; the latter on a Typhus state: for at times the limbs are tremulous and a great disposition to sleep; evacuents are highly proper and in fact indispensable in the complete care of this disease in the excitive stage you may perge with the neutral salts such as magnesia creme of tartar using caution not to suffer it to perge toomuch when it is found passing off the bowels by frequent watery passages; it should be checked by laudanum or astrengent enemas in in the coed stage when the bowels have been evacu=ated the blue pill; given in four grain doses every three or four hours together with mercurial fric=tion interchanged with quinine & occasionally brandy grog so as to keep up the excitement it is also

proper. Epispastics may also be used with great bene=
=fit; particular attention should be paid to check a
return of vomiting; this may be effected by a mustard
plaster applied over the stomach if it be necessary
to support the system by stimulants small doses of
opium (half grain) every two hours should be used
in preference to larger quantities by this means we
may avoid the narcotic effect. When the patient
is brought out of this altered state of the circulation
and the animal heat restored. the warmth of the skin,
the cuticular discharge; the force of the Radial
artery; the appearance of the tongue and eye; and
the state of the secretions; together with the feelings
of the patient, are the data on which we are to regulate
our future treatment, if he be exempt from pain and
fever, tongue clean and eye clear, secretions natural
and compeains of nothing but weakness which is
universal, we are then to assist nature in her ope=
=rations by the use of tonics, and spare nutrient diet
by which mode of treatment speedy convalesence will
insue But should the case be different the treatment
must be regulated by the State of the system and
symptoms then existing;

AN
Inaugural Dissertation
ON
DELIRIUM TREMENS.

Submitted to the Examination
of the Provost Trustees & Medical Faculty
of the
University of Maryland.

For the Degree of Doctor of Medicine

By

James T. N. Maddox
of Maryland.

March 1832

Member of the Medical Society
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To
Samuel Baker M. D.
Professor of Materia Medica
in the
University of Maryland.

As a token of esteem for his virtues, & profound respect for his professional attainments; this Inaugural Essay is respectfully dedicated by
The Author.

To

N. Potter M.D. professor of the

Theory and Practice of Medicine

in

The University of Maryland

As a testimony of gratitude, for his instruc-
-tions, & respect and admiration; for his pro-
-fessional erudition and eminence; this the
first attempt is inscribed by

The Author.

To

E. Geddings M.D. Professor of
Anatomy in the
University of Maryland

As a token of respect & esteem for his professional attaiments. — No less than his dignity of Character and exemplary deportment; this dissertation is respectfully inscribed by

The Author.

In all ages of the world, diseases have been properly believed to be the most prolific sources of human suffering. To investigate their nature & treatment, and obviate their causes, is the business of a physician. In the following pages I have attempted to describe the nature and treatment of one of the evils arising from the intemperate use of ardent spirits. No agent has a more extensive and diversified influence in the causation of disease; None a more degrading effect on the morals: and none is more destructive of social intercourse and human happiness. In every country where it has been introduced, desolation and degradation has marked its course. It assails with equal success the prince and the beggar, the Statesman and the peasant; and its sacrilegious arm has even extended to the pulpit. That it should have attracted so little attention from physicians, as not to have a place in their systems of Physick is truly astonishing; and it is still more surprising that it should have been passed unnoticed by all medical writers till the nineteenth century.

Its almost universal prevalence however at this time, makes it not only a matter of curiosity, - but also of necessity for a physician to become intimately acquainted with its effects and consequences on the human system. Without such knowledge he can never treat them successfully. —

Latterly physicians, with a spirit truly laudable, have turned their attention to this important

subject. and we may hope, that ere long we shall be furnished with a sufficient number of facts to give this disease a permanent character, or what would be more desirable, that the exertions of the Temperance Societies may eradicate this formidable malady from our happy country, and thus, render further investigation unnecessary.

Articles of a distilled or fermented character have exerted a most pernicious influence upon the physical, moral, and intellectual nature of man, in every age of the civilized world. Among the multifarious evils of this practice, one has been separated, and called by a number of authors Delirium Tremens.- The subject of this essay. His difficult to discover, in the records of the profession, any very distinct traces of this disease, earlier than the nineteenth century; that it did however, exist in the most remote periods of recorded history, must be admitted when we recollect that stimulating liquors were in familiar use in the days of Homer.

Dr. Samuel Burton Pearson described this disease in 1801. and to him we are indebted for the first attempt to distinguish it from other affections. A variety of names have been given it viz The Brain fever of Drunkenness, Delirium Tremens, Mania à potu, Mania à Temulentia, Febris Temulentia, Delirium Ebriositatis &c. &c. &c.

It would certainly be desirable to give it an appellation by which all nosologists should call it and with which all pathologists should be pleased such a name however, has not been proposed. In Germany and France, in England and Ireland, & more particularly in the United States, the phrase Delirium Tremens, although highly objectionable, has recieved almost universal adoption, public opinion has sanctioned it, we shall therefore though with some hesitation adopt it. —

Aetiology

Universal consent, deduced from the most ample & diversified experience, has abundantly established the fact, that of all the causes which are occasionally instrumental in the production of Delirium Tremens, the habitual & intemperate use of ardent spirits is infinitely the most prolific.

Opium has also produced this deleterious effect. We are informed by Dr. Armstrong, that he had attended a female, who had long been in the habit of taking opium to a very great extent, & who was attacked with this disorder, on suddenly lessening the dose of her favorite drug. It is also remarked by Dr. Coates that he has seen strongly characterized cases, which were produced by the intermission of the use of opium.

An instance of this disease, was seen in a lady, by

Dr. Sutton, which resulted from habitually taking the tincture of Lavender in large quantity. The long continued use of Wine, & beer has produced it, in a mild form, according to some authors. Dr. Ayre, who has had an extensive practice in this disease, has seen it arise, from several other causes than intemperance in drink; he has seen it result from the emanations of Lead. —— from starvation & some other sedative causes. With due deference however, to Dr. Ayre's opinion I must state that those diseases are in my opinion entirely unlike.

Cases have been recorded, as Delirium Tremens; which resulted from extensive burns, wounds, translation of Rheumatism &c, &c. but unless those patients had been previously indulging freely in ardent spirits, I cannot conceive they were essentially the same.

Is a protracted course of drinking immoderately always essential to the production of this disease? This is the general impression. From the force of testimony, however, as well as, from personal observation, we are constrained to answer in the negative. Thus in the 13th Vol. of the American Medical Recorder, two cases are alluded to, the subjects of which were what is usually denominated "tipplers, and not drunkards." From Dr. Barkhausen, we learn, that he has seen Delirium Tremens in individuals, who but seldom, or never became

intoxicated. This evidently proves that it may result from inordinate stimulation, even though inebriation was seldom or never induced.
In our deductions however, upon this subject, we should not be governed exclusively by the quantity of Liquor daily consumed, or the length of time the patient has indulged in the deteriorating practice of drinking. The natural strength & irritability of the constitution will always exercise great influence in modifying the result. Thus when there is but little constitutional strength, & considerable nervous irritability, ardent spirits will produce much higher excitement, than where the circumstances of the individual are directly the reverse. If this be true, the legitimate conclusion is, that Delirium Tremens will be developed with the least promptitude, in the constitution which most reluctantly comes under the influence of unnatural spirituous stimulation.
Before Delirium Tremens can be produced, is it necessary, that the use of ardent spirits should be suspended? This is a popular, but I am persuaded, a gratuitous opinion. In a majority of instances, it is unquestionably true; but that it is universally so, we positively & unhesitatingly deny. Delirium Tremens, it is remarked by Dr. Coates, occurs in every case, so far as known, as a consequence of the sudden suspension of the use, more or less

habitual, of a narcotic, or narcotico-stimulant substance. By Dr. Lind the reverse of this is maintained, By Dr. Barkhausen it is asserted that habitual drinking is usually sufficient, without the interposition of any exciting cause, to produce Delirium Tremens.

In Dr. Coates' essay, there is a case directly opposed to the opinion which he defends. Michael Leidy, about forty years of age, was committed to prison on the 30th of April, was much intoxicated, & had been so almost constantly for the last six months. The next day he had a convulsion fit, — & discovered symptoms of mania, notwithstanding he had received a gill of spirits from the Keepers. Dr. Mathey of Geneva has recorded a case, in which the individual only ceased excessive drinking while asleep, & yet Delirium Tremens was developed in him.

General Character of Delirium Tremens. — Much to the prejudice of sound pathology & philosophic practice, this disease has been almost uniformly considered an affection that presents itself, characterized invariably by the same conspicuous features. That this is an error of enormous magnitude, & must have been extensively pernicious in its practical results is fully illustrated by the great discrepancy of opinion existing among authors, not only in regard to its seat & nature, but also

on the subject of its treatment. Thus while a considerable number of highly respectable physicians consider the energetic enforcement of the opium practice, the great palladium of the patients' safety, there are those who are fully as much entitled to our confidence, who condemn this course, as unauthorized by the nature of the disease, as wholly unwarranted by the success obtained; & who contend, that the active employment of antiphlogistic measures, is the only anchor of well-grounded hope. Is this not conclusive evidence, That Delirium Tremens cannot have invariably presented itself under the same form, to physicians equally respectable, who hold opinions of its nature, & pursue modes of treatment, so perfectly contradictory? The only conclusion I can draw from these facts, is that the opposing sentiments of the authorities just alluded to, are to a certain extent, founded in truth. -

To correct as far as possible, the evils into which such practical views must necessarily lead, it is requisite in the first place, that we should give a general description of Delirium Tremens; & afterwards, minutely notice the symptoms characteristick of each of the different forms under which it most commonly occurs.

In a large majority of the cases of this disease, it will be found to make its onset during that state of depression, which invariably occurs, after a

protracted & immoderate use of ardent spirits has been suddenly relinquished, some authors say, as large a proportion as eight tenths originate in this way. The first distinct feelings of indisposition are lassitude, indistinct chills, there is frequently a considerable reduction, & sometimes a marked augmentation of the heat of the skin. The body generally, but particularly the face hands & feet, are bedewed with an abundant & disagreeable cold, clammy perspiration, sometimes however the skin is hot & dry, & it frequently happens, that when perspiring, the fluid exhaled is comfortably warm. The pulse is exceedingly various, often remarkable for its slowness & fulness, not yielding in some cases, more than fifty beats in a minute. In some of the forms of this disease it presents a character altogether different, sometimes we find the pulse remarkably small, thready, quick, & so frequent, as to give more than one hundred & twenty pulsations in a minute; sometimes full, round, voluminous, but compressible; sometimes tense, resisting, & with difficulty compressed. The appetite is always impaired, frequently annihilated, & the patient generally experiences an insurmountable loathing for animal food. The tongue is usually moist, though sometimes dry. It presents numerous morbid appearances, & is sometimes perfectly clean. in some cases it is covered with white fur,

sometimes with a sticky gelatinous slime, frequently white, & often of yellow bilious hue. There is generally nausea, frequently vomiting, though in some cases the stomach is perfectly tranquil throughout the disease. Oppression & precordial anxiety are scarcely ever absent. Frequently there is epigastric tumefaction & heat, There is sometimes an exception, but in a majority of instances, the head suffers from pain. This exists from simple head-ache to the most intense & insufferable torture. The spirits are generally gloomy & depressed. though sometimes in a high state of exhilaration. The expression of countenance is usually dejected & melancholy, though sometimes haughty, fierce, & daring. Watchfulness commonly exists from the inception, & obstinately persists, until the disease is subsiding. If the patient should sleep, his naps are short, unrefreshing, & frequently interrupted by alarming & frightful dreams. The hands generally tremble; often the tongue, & in some cases the muscles of the extremities are spasmodiccally affected. There are cases, however, in which there is no tremor; the hands exhibiting astonishing normal steadiness. The bowels are almost uniformly in an obstinate state of constipation. In some rare instances, they are found in a state of colliquative Solubility.

The length of time during which the system labors

under the symptoms just enumerated, before delirium is developed, is various, & cannot be determined with much precision, generally, however, they will be found to exist from twelve to forty-eight hours, although its developement will take place in a number of instances earlier.

The form when it is developed is peculiar, & so far characteristick, as to be seldom revealed in any other abnormal state of the system; its conspicuous attribute consists in a belief of the existence of frightful objects, in positions, in which, as Dr. Pearson has well remarked, "it is physically impossible for them to be placed."

Confusion of mind, or forgetfulness supervenes, which passes on to a state closely resembling mania. Patients suppose their affairs are ruined; or that certain persons have conspired to poison or shoot them; or that they are confined against their inclination in a strange place. When they imagine they see those frightful objects, the impressions of which are so forcible, they call loudly for assistance to drive them away. At other times, they declare that vermin are crawling over the bed or about their clothes; or that bright or dark spots are floating in the atmosphere; sometimes they fancy that they hear remarkable noises in the room or at a distance; & in other examples alternately listen & speak, as if conversing with one that was present. They are often intent upon calculations, buildings, projections,

counting or picking up money, settling accounts, or some such imaginary employment; if you attempt to address them, they will either unhesitatingly pursue their occupation, or abruptly tell you that they must not be interrupted. In short, they are either earnestly engaged with business immediately before them, or their attention is wholly engrossed by conspiracies, suspicions, dangers, or the like; & it is remarkable to observe, how the expression of the countenance varies, according to the nature of the predominant impressions. Sometimes enjoying the most pleasing train of associations, the beauties of nature & art engaging their attention. At such moments they seem lost in the ecstacy which their disordered imaginations have created. This state, however does not continue long; the mental bias being for the most part of the melancholy cast. If the patients be flatly contradicted, they are readily excited into a passion; being generally, very pertinacious of their opinions; but if they be soothingly dealt with, they will now & then answer certain questions mildly, & even distinctly; nevertheless, if many interrogations be put to them in succession, they become confused, & relapse into their former incoherence. Sometimes they mistake the name of things, or the pronunciation of words; & although they generally recognise most of their acquaintances, they load some of them with abuse on trivial

occasions, & request the friendly interference of others. It is a matter of astonishment to observe with what precision the expression of countenance corresponds with the emotions which disturb the mind, & the ideas that float wildly through this desolated mansion of thought.

Frequently patients display extraordinary corporeal vigour, in one case which came under my observation; it required seven men to restrain the actions of the patient; either of whom were stronger than the patient was when in health.

It has been asserted, that this delirium always relates to, & is exclusively engrossed with the private affairs of the patient. This is doubtless very commonly the case; but when it is asserted to be universal, we dissent, from a conviction that it is unsustained by experience. It sometimes happens he cannot be convinced he is in his own house; & the calamity he dreads is not always personal. The misfortunes of his friends constitute, on some occasions, the ground of his complaints.

Some or all of the symptoms above enumerated, may continue as long as ten days, and cases less immediately urgent may be considerably more protracted. However if convalescence be not established, at that time in bad cases, the symptoms assume a decidedly adynamic character. Either of these events may however, & actually do, in a majority of cases, supervene sooner. Armstrong says

that in some of his patients it continued nearly six weeks. When convalescence is not restored within the first month, there will be a risk of long continued, if not permanent alienation of mind; as the most strongly marked cases terminate successfully or mortally before that period.

Classification of Delirium Tremens.— There are no less than three varieties of this disease, which it is important for the physician to study closely, & understand thoroughly, or he can never treat them successfully. The epithets, which, I shall employ to designate & express these several varieties are, Sthenic, Hypersthenic, & Asthenic. The word Sthenic was employed by Brown, to designate that state of the system which disposes to inflammatory diseases. As our first variety consists in vascular irritation, a condition which doubtless predisposes to, & frequently terminates in, inflammation, the epithet Sthenic may be with peculiar propriety, employed to designate it. Thus the first variety is Sthenic Delirium Tremens. The term Hyper=Sthenic has been used to signify excess of action complicated with inflammation. Therefore we have called the second variety Hypersthenic Delirium Tremens. The epithet Asthenic has been employed to denote debility, & as the third variety consists in nervous irritation & atony, we have determined to use it. Thus we have called

our third & last variety, Asthenic Delirium Tremens. These varieties, however, are only useful to illustrate the different appearances which this disease may assume; & it must be borne in mind that it may appear in any & every variety of type; & be complicated with each disease in a nosology, which will more or less modify its course & termination.

Probably more appropriate names might have been employed, to designate these varieties, but as their meaning is abundantly obvious. & as the objects in view are chiefly of a practical character, they are sufficient to answer the purpose.

A full account of the symptoms having been given in the general description, we shall abstain as much as possible in describing the symptoms of the several varieties, from the enumeration of any, but such as are conspicuous, & appear to be characteristic.

Sthenic Delirium Tremens. — In those attacked by this variety the constitution is never much impaired. The subjects of it are robust & but little advanced in years: Or if they have passed the meridian of life, they have not long been in the habit of drinking intemperately. The appetite is not much impaired, nor are the powers of digestion materially injured. In this variety the patient talks incessantly, incoherently & boisterously, his temper is unusually irritable. There is considerable determination of blood to the head. The patient

complains of vertigo, tinnitus aurium, sharp, & sometimes a dull, heavy pain in the head. The skin is generally hot & dry, though sometimes moist & perspirable. The tongue is furred, its edges red. There is nausea, & sometimes vomiting. There is epigastric heat, with precordial anxiety & oppression. The bowels are costive. There is constant watching. The tremor of the hands is generally inconsiderable; or is sometimes altogether absent. Dr. Armstrong says it was entirely absent in three of his patients; but tremor has also been seen to pervade the body generally. The pulse is accelarated, full & even hard, though frequently compressible.

Hypersthenic Delirium Tremens. — occurs in character identically the same, as the preceding variety. Here the patient becomes frantic very early in the disease. There is great cerebral determination; the pain of the head is intense, the temples throb; the eyes are injected & intolerant of vivid light; the pupils are sometimes contracted; the face is flushed, the features swelled; thirst is excessive; The tongue is generally covered with a white, & sometimes with a dark brown fur, its edges deeply red; The breath is offensive. The body & head are generally very hot, while the feet are cold. There is rarely much, if any, perspiration; it appears in some cases however, & is even abundant & chilly. The epigas-

-trium is intensely hot, & even painful, when forcibly compressed. The pulse is frequent, firm, & full. Tremor is very aggravated, & watching constant. The bowels are costive, & the urine clear & limpid. Convulsions are more common in this variety of Delirium Tremens than in any other, they frequently appear without any premonition, the patient becomes insensible & immediately after convulsed, he foams at the mouth; respiration is often stertorous, & the paroxysm terminates in stupor.

Asthenic Delirium Tremens — uniformly occurs in the shattered constitution of the drunkard, exhausted by protracted & excessive indulgence in the use of ardent spirits. The appetite is annihilated; The digestive & nutritive powers are almost paralysed; The face is bloated, & the countenance is of a tallow complexion. The first evidence of the approximation of this variety is a peculiar & striking mental depression, An indefinable solicitude, accompanied by heavy, deep sighing, & watery eructations. He soon complains of oppression & anxiety at the precordia; there is always nausea, & very frequently vomiting; The tongue is loaded with a tenacious slime; He is troubled with flatulency. The general collapse of the system, at the time of the attack, seems to prevent the developement of anything like an equable excitement; & hence we find the heat of the surface in that fluctuating or

partial state, which often attends congestive forms of the irregular kind. The face is shrunk; The complexion pale, wan, & cadaverous; The perspiration is inordinately abundant, & it imparts to the touch the cold & clammy sensation of approaching dissolution. The pulse is quick, feeble, thready tremulous, & sometimes so frequent as to be counted with difficulty. There is obstinate & uninterrupted watching, very early developed. Tremor exists in a very aggravated form, &, besides the hands, it generally seizes on the tongue. Delirium now sets in, but is not apparent so early as in the preceding varieties. Its spectral character is exhibited in the highest perfection, in this variety. he talks less vociferously, or incessantly, & his deportment is far less violent, than in the preceding varieties. He is more easily soothed, & his confidence more promptly secured, by the conciliating & complying physician, When the delirium is fairly developed, the gastric irritability is always very much moderated, & often entirely extinguished.

PROGNOSIS. — The circumstances which contribute to enable us to form an opinion of the probable result, are numerous & diversified. If a tranquil & long sleep can be procured in the commencement of the disease, recovery will commonly follow apace; although Armstrong lost a patient unexpectedly in convulsions, after he awoke from an apparently quiet sleep of six hours duration. Indica-

-tions of coma or convulsions; perpetual watchful-ness; excessive irritation; violent & often renewed struggles; very rapid & thready pulse; frequent vom-iting; extremely cold skin; profuse clammy per-spiration; subsultus tendinum; & especially small contracted pupils, with a degree of strabismus an among the most unfavorable signs: also a dry tongue, anxious countenance; picking of the bed clothes &c. &c. &c.. Those patients who have been driven to intoxica-tion from some great affliction, are generally in imminent danger; for during the progress of the complaint, their raving incessantly turns upon the recent calamity, & produces an irritation & ex-haustion most difficult to be counteracted. But confirmed drunkards, who have previously laboured under chronic Hepatitis, or some similar organic affection, perhaps have the least chance for recovery. In some cases death supervenes in consequence of venous congestion & irregular ex-citement, the patient dying in a comatose or apoplectic condition.

Diagnosis.— So striking & peculiar are the charac-teristick symptoms of this disease, that to confound it with any other would be inexcusable.— As mistakes here are uniformly of a deleterious tendency.

Until the ~~beginning~~ of the nineteenth century, this disease was confounded with mania. This is the more surprising, as the delirium of the mania is seldom spectral; their watching not so constant;

Tremor of the hands & tongue rarely occur; Nor is the profuse perspiration, a circumstance of such common occurrence in Delirium Tremens, a symptom of mania. The wild, glaesy, furious eye of the maniac is never seen in persons labouring under this disease. But constantly an inexpressible anxiety of countenance, converting almost every object into terror. in Delirium Tremens, the mental alienation generally relates to the private affairs of the patient. In mania the symptoms are manifestly increased as day begins to dawn, while in Delirium Tremens they are exacerbated at night, & experience a sort of remission in the day.

The compressibility of the pulse, & the spectral appearances will readily distinguish it from Phrenitis.

Appearances after death. — In examining the body after death, the brain more particularly, it has often been found in a state of congestion, oftener known, in a state of active Inflammation. In nearly all cases examined by professor Geddings, traces of Arachnitis were found.

In some cases inflammation in its most perfect form exists in the stomach, but this is by no means a uniform occurrence.

The Liver. — is seldom found perfectly healthy, in those who have for a considerable time, indulged in the practice of frequent intoxication. In a state of intense predisposition, it cannot avoid being deeply implicated in this disease. Some have found it in a state

of congestion, others in a state of inflammation, & Dr. Sutton found it in a state of suppuration in two cases. The peritoneum & other structures have presented appearances, differing from those of health. but I conceive any further detail of abnormal appearances is unnecessary.

Treatment. — As the disease is divided into three varieties. It is necessary that in the treatment we confine our remarks to the remedies suitable for one of those varieties at a time. Our first variety is the Delirium Tremens. Therefore we shall first confine our remarks to the remedies suitable for this variety. As this variety occurs in firm & robust habits, is essentially a vascular irritation, excitement, or simply fever without inflammation; it should never terminate fatally. It often subsides without remedies, & judicious treatment will never fail to accomplish a complete restoration of health.

The patient should abstain from his accustomed beverage, confine himself to a horizontal posture. take a cooling purgative as Sulph Magns. or Soda. to obviate the costiveness of the bowels. after the bowels are freely evacuated, should the thirst, the heat & dryness of the skin or continue, the effervescing mixture, and the ℞ of Tart. Antimon. et potass. alternately every hour should be given till the disease disappears. An antiphlogistic regimen should be rigidly enforced, during the whole course of the disease.

Hypersthenic Delirium Tremens. — This variety is completely under the control of the physician. — The commencement of convalescence is always preceded by a normal sleep of not less than six hours duration. — Less than this is rarely production of much good. We say a normal sleep, which must be carefully distinguished from a disturbed & unequiet sleep, usually resulting from the operation of powerful narcotics. Death may & has, succeeded a sleep of this kind. Before the vigour of the vascular system has been sufficiently subdued, the brain may be readily forced into an apoplectic state, by the injudicious employment of narcotics. During the existence of high inflammatory excitement, death may supervene upon convulsions, to which frequently succeeds an incurable state of apoplexy. This we have too often to ascribe to the premature use of opium. — An inefficient & pusillanimous treatment may succeed in preventing an immediate termination of the disease in death, but it will never subdue it. When treated in this manner, it assumes a more protracted character, & either runs into the Asthenic variety, or terminates in permanent alienation of mind, & this not uncommonly in apoplexy & its various consequences.

As this disease consists essentially in inflammation & consequent symptomatic fever we should treat it accordingly. If the symptoms are urgent we should commence by abstracting blood. Dr. Potter, our distin=

=guished professor of the Theory & Practice of medicine, found it necessary in one case, to bleed copiously fin times. Dr. Armstrong also, found it necessary to bleed once, & venn repeat it in several cases. purgatives are indispensable, not only in the beginning, but also, during the progress of the disease. as the liver is so frequently deranged by this practice of drinking 15 or 20 grs of Calomel should be given immediately after bleeding, followed in four hours by a dose of Sulph. magnesia. To allay the excessive thirst, & quiet the burning heat of the stomach ℥j of the sup. carb. soda & ℥ij Lime Juice may be given every half hour in a wine glass of water. The patient should be kept as quiet as possible, & strictly adhere to the antiphlo=gistic regimen. The room should be dark cool & bladders of pounded ice may be applied to the head, after using the shower bath or cold affusions with great propriety & advantage. Should these remedies subdue the force & frequency of the pulse, & fever also, without producing tranquillity & sleep; we may safely give ℞ Pulv. Doveri, Hyd. Sub Mur. a ʒss at night. Bleeding & purgatives however, are only proper in the first stages of the disease. When it has been permitted to pursue its course uninterruptedly till the pulse becomes feeble & frequent, evacuations of any kind, would only tend to exhaust the patient still far=ther & hasten dissolution. Cold applications have only been used in the first stages of the disorder on persons of athletic habits. Armstrong used it

in the cases of two hearty young men during profuse perspiration, afterwards rubbing the body dry with cloths, giving a little negus & placing the patient in bed. In every instance, in which he saw it used, the conditions of the skin & pulse were improved by it, & the general irritation greatly diminished.

As coercion is always prejudicial, patients should be allowed as much liberty as is compatible with their situation; & as contradiction greatly increases their irritation & watchfulness, our aim should be to soothe by address & conciliation. In some cases it may be proper to permit them to walk abroad, if properly protected, as the influence of a cool air, united to that of compliance, has sometimes been useful in procuring rest. One man says Armstrong was allowed to go nearly a mile to look at the sea in a bleak evening, & soon after he returned he fell into a profound sleep, & was convalescent the next day. Another walked about in a large apartment, when the weather was cold, with nothing but his shirt on for two hours or more, & afterwards went to bed of his own accord, & passing a quiet night from that time recovered apace. In this disease as in mania, the circulation is always greatly disordered by fasting, & therefore regular supplies of light food are necessary such as subacid fruit, rice, milk &c which like the other expedients recommended, will be found to allay the

general turbulence of the system.

Asthenic Delirium Tremens. — In this variety our treatment must differ from that of either of the preceding conditions. Here, the decisive, prompt, & judicious administration of therapeutic agents is generally necessary, as the unaided exertions of the system are rarely, if ever able to overcome it. A sound refreshing sleep of from six to twelve hours duration is a sine qua non to recovery. & a sleep of this kind is a sure indication of returning health.

As this variety usually occurs in the shattered constitution of the drunkard, exhausted by protracted & excessive indulgence in the use of ardent spirits. our treatment must be accordingly modified. In some cases we find an uneasiness in the head which is increased on motion & some determination of blood to the brain. The heat of the surface of the body is also in many cases irregular. To relieve the vessels of the brain cups or Leeches should be freely applied to the back of the neck & temples. a dose of oil should be given assisted in its operation by laxative enemata. The patient should now be placed in a warm bath from which he should be removed at the expiration of five or six minutes, & being rubbed dry with flannels, placed in bed. If the pain is removed we may now administer thirty or forty drops of Laudanum, should this quiet the system in some measure

without producing sleep it may be repeated in augmented quantity till it does. Should this remedy, however, increase the pain in the head, the watching, the irritability &c it should be instantly omitted, & the patient take the effervescing mixture (as before prescribed) every hour, keep as quiet as possible, in a dark room, use mild articles of food, bland drinks & the like till these untoward symptoms shall have subsided.

In cases, when the pulse is weak, the face very pale, the surface clammy & cool, great muscular debility & relaxation &c. — Why then all thoughts of bloodletting must be abandoned. It would be as injurious in this as beneficial in the preceding variety. evacuations must be used with the greatest caution as they will sometimes prostrate the system beyond recovery. In some cases a mild purgative as Castor oil, or Rhubarb & magnesia a ℥j may be employed; but generally enemas will be sufficient to evacuate the bowels. after the bowels have been freely moved the patient should be placed in a warm bath, from which after remaining a short time he should be removed, rubbed dry with warm flannel, placed in a warm bed & take ℥j Tinct. Opii. Should this neither relieve nor aggravate the symptoms, it should be repeated in augmented dose, until tranquillity & a profound sleep of six hours

duration shall establish convalescence. The warm bath being repeated two or three times daily in conjunction with the narcotic treatment until this desirable effect is produced.

When the patient begins to convalesce excesses of any kind should be avoided, the patient should pay strict attention to his diet & bowels, keep regular hours &c, &c,

In this variety, cold should be particularly & sedulously avoided, as it combines with the disease in this form to exhaust the patient's strength & vital power, by favoring congestion of the internal vessels. - - - -

Une dissertation inaugurale
Sur la Fievre,
presentée pour le jugement et l'examen
— de —
Mons.r Roger B Taney, Prevôt,
— et des —
Curateurs et de la Faculté Medicale,
de l'Universite de Maryland,
pour le degré du Docteur en Medecine,
— par —
Samuel Higgins de Maryland

Fever

It may appear somewhat singular that a young man, of moderate pretentions and abilities, should presume to select for the subject of his medical dissertation a disease, concerning which, such a vast contrariety of opinion has been entertained, as that commonly known by the name of Fever. I know of none indeed, in the whole compass of Nosology, concerning which medical men have differed so much, and so widely, both in their theoretical views, and in their practical precepts, as the one now under consideration. The lapse of several thousand years has been insufficient to bring medical philosophers to any settled conclusion upon this subject — and altho', during that time, the world has given birth to many men, and some mighty men in physic, yet none of them have succeeded in answering this most difficult question, what is the essential nature of Fever? And judging from the great variety of opinion which prevails upon this subject, even in this day, we might not err in hazarding a conjecture, that we are as far from coming to any settled agreement upon this point, as when Hippocrates first set out, alone and in confidence, to navigate, and explore this wide and unknown sea.

There is something in reflections like these, which are well calculated to deter a young man, and especially one who is diffident of his own abilities, from following, even at a distance in the wake

men, who have signalized themselves beyond all example, by their arduous and untiring efforts to
cover the intimate nature of fever, and thereby confer an important benefit upon their pro=
fession, and upon the world. But however much such reflections might speak for our mod=
esty, they would speak nothing for that spirit of ardour and emulation which every
one should feel, who aspires to the honour of entering upon the duties and responsibilities
of a profession in which so many men have run such distinguished careers, and
are down to their graves, honoured and beloved; and whose sole business it is
to become the guardians over the lives, health and happiness of our fellow
creatures;— and connect with this the simple fact, that there is none more
frequently recurring, either as a cause, a complication, or a symptom — none
more obscure in its pathology, and none more fatal in its end, you have
our sole reasons, for entering upon a recapitulation of the many prominent
theories, which have been entertained upon this subject —

Hippocrates, who we believe was the first to speculate upon the subject,
considered increased heat, to be the essence of Fever, and founded his divisions
of Fever upon this principal; and believed them all to arise from the
superabundance of, of one or the other of the four humours, blood, phlegm,
yellow, or black bile; and that the disease itself was the result of a
contest on the part of nature, to expel this morbific matter from the
system, or to render it inert, or harmless, by the process of concoction.

Galen, who succeeded him in the schools, modified his hypothesis to
say; that of the three kinds of intermittent, the quotidian arises from
the corruption of phlegm, the tertian from that of the yellow, and
the quartian from that of the black bile — but in all essential
particulars, he was the disciple, or in fact merely the amplifier of

of the opinions of his predecessor.

Stahl, a distinguished disciple in Germany, rather mystified his doctrine of the theory of fever. He believed that there was a kind of vital spirit, travelling along the course of the nerves; and that disease was a disease of this spirit, or of the influence which was travelling in that direction. Of more of his theory, or even of his partial success. We are unable to say any thing positive, for want of information.

Sydenham, who lifted up a new curtain upon practical medicine—and who brought, says one of his biographers, to the study of medicine, one of the most acute, upright and honourable minds, that ever adorned it— yet still adhered with all his might to the humoral pathology, in his work on fever; from which, we regret that our limits will not permit us to make a single extract.—

Boerhave, likewise of the same school, adhered with great tenacity to the doctrine of a lentor or viscid state of the blood; which principle he applied very ingeniously to the explanation of the phenomena of fever.

The most rational views of the intimate nature of fever were those of Hoffman, who believed that fever consisted, primarily, in diminished energy of the nervous system. Doctor Cullen went a step farther, and argued that the diminished energy of the brain, ~~brought on a spasm of the extreme vessels~~ being the consequence of certain sedative powers applied to the nervous system producing debility, brought on a spasm of the extreme vessels, which spasm he believed to be the proximate cause of fever; and that reaction

was brought about by the agency of what he chose to denominate the vis-medi-catrix-naturæ, the innate preserving power of the Constitution.

Brown, who came after Cullen, and who was the pupil and rival of his master, atributes all fevers to debility; and affirms that the distinctions which physicians have made about the differences of fever are without foundation: that they are all the same, differing only in degree: that the debility during the cold stage is the greatest; that of the hot less — that of the sweating stage which ends in health for a time is the least of all; that the cause of all these diseases, from the simplest and mildest intermittent to the yaw fever and the plague, is the same, in all to wit: debility, differing only in this, that it is the greatest debility compatable with life, and not long compatable with it; — Principals like these introduced a new and easy system of practice, and for a time the theory of Brown was a universal favourite; but its dangerous tendency was soon made manifest, and it has since fell into great disrepute.

Dr Wilson Philip supports the doctrine, that, fever consists, not in a spasm of the extreme vessels, but in the preternatural distention, and consequent debility of the capilliaries. Others refer the source of fever to the inflamation of some particular organ or organs: as Bianchi to the Liver - Smalve to the Pancreas - others to the Vena Cava - Rahn to the digestive functions generally, Broussais to the mucous membrane lining the intestines and stomach and finally Clutterbuck the brain. Many others have put in their claims for the solution of the question, among whom are the

names of Armstrong, Clayge, Byron, Stokes and our own illustrious countryman Dr Rush. But as our time is limited we are compelled to hasten on: and we remark in review of what has been already said, that, "All the partial and imperfect views brought into these pages, originate in one or the other of the following errors, obvious as they all are: either that of assuming as a fact what is merely a conjecture: or that of assigning to the genus what belongs only to the species; or that of characterizing the disease by what appertains only to a stage: or that of mistaking the effect for the cause. On a careful examination it will appear that one or other of these errors, which are as serious as they are palpable, has vitiated in a greater or less degree, every generalization of fever that has hitherto been attempted.

"Thus, the believers in debility derive their notions of the whole disease from the phenomena which occur in the first and the last stages only: in these, it is true, they may find abundant evidence of debility; but then they overlook the intermediate stage in which there are generally the most unequivocal indications of increased sensibility in the nervous and increased action in the vascular systems: in this manner they characterize the disease by what appertains only to certain stages of it. Again, when they contend that debility is not only the essence of the fever in general, but is really characteristic of every type of it, they affirm what is indisputable of fevers in particular seasons, in particular climates or in particular constitutions; but beyond this their generalization cannot be extended: in this manner

they assign to the genus what belongs only to the species. And when Cullen goes on to affirm that the proximate cause of all the morbid phenomena is a "spasm of the extreme vessels", he commits the additional, and more palpable, but not less common error, of assigning as an undoubted fact, as a real and ascertained occurrance, what is only a conjecture, and for which there is not, and for which he does not even attempt to adduce the shadow of evidence.

"Precisely similar to this is the error of those who for the most part belong to the same school, and who atribute the essence of fever to a morbid condition of the blood. The blood may be diseased in fever, but if it be so, these writers do not know it, or at least they do not adduce any evidence that they are in possession of such knowledge: they do not appear so much as to have questioned chemistry: at all events, it is certain that they have hitherto received no satisfactory answer. There is no evidence on record that the alledged determination of the blood takes place in every typhus and every degree of fever: and if there were it would still be but one event among many, and one that occurs late in the series, and therefore could possibly be nothing more than an effect.

"In like manner those who maintain that inflamation of the brain is the sole cause of fever, assume as an established and admitted fact, the universal and invariable existance of inflamation of the brain in this disease. Inflamation of the brain, without doubt, is demonstrable of many individual cases, and of some whole types: but beyond this there is no proof that the

generalization can be carried: the evidence indeed in regard to many cases is entirely against the assumption, and is as complete as negative evidence can well be: consequently it must be admitted that even this hypothesis in the present state of our knowledge, is founded on the error of assigning to the whole genus that belongs only to particular species: and it would be trifling with the reader to attempt to prove, that this is still more certainly and strikingly true with regard to inflammation of the mucous membrane of the stomach and intestines — an affection which in innumerable cases in which its existance is certain, clearly appears on the slightest examination of the succession of events to be an effect and not a cause". . . . . .

. . . . "This frequent and formidable disease, on the investigation of which we are entering, cannot be understood until clear and exact answers are obtained to the following inquiries. 1. What is the series of phenomena which constitutes fever? 2. What are the particular phenomena which are common to all its varieties and combinations? 3. What is the order in which these phenomena occur in the series? 4. What are the organs, and what their states, upon which these phenomena depend? 5. What are the external signs of these internal states, or what are the indications by which their existance may be known? 6. What is the external noxious agent or agents, or the exciting cause or causes of the disease? - 7. What is the particular remedy, or the particular combination of remedies which is best adapted to each state of each organ"?

The questions here asked, as well as a few preceding paragraphs

are taken mostly from Southwood Smith's invaluable work on fever. And as I conceive that he has answered them so satisfactorily, and so fully established the facts there enumerated, besides so logically drawn the inferences from the premises laid down, ~~that~~ the present sketch will be nothing more than an outline of that inestimable work.

Fever, according to this celebrated man, consists in a certain series of events;— these events being nothing more than certain changes which take place in certain internal organs: these organs giving evidence of their derangement by certain signs, which in the technical language of the book are called symptoms: these symptoms being nothing more than the external signs ~~which~~ or evidences of certain deviations from the healthy condition of certain internal organs.

He goes on to say that in the production of fever, it is necessary that a certain number of organs be affected; and not only that a certain number be affected, but affected in a certain order— in the language of this Author, in an <u>invariable</u> order of concurrence. Now it remains to be shown what these organs are, and what is the order of concurrence which they follow.— Still taking the Doctor for our guide, the organs affected are those which constitute the nervous system, those which constitute the circulating system, and those which constitute the systems of secreting and excreting. The Spinal cord and the brain, the heart and the arteries, especially their capillary extremities— the secreting and the excreting organs, which in fact are composed essentially of the ~~arteries~~ capillary extremities of the arteries, the secreting and excreting extremities of those arteries especially as the terminate in the external skin, and mucous membranes which form the internal skin

this is the chain of diseased organs — derangement in the nervous and sensorial functions — derangement in the circulating function, and derangement in the secretory and excretory functions; this is the circle of morbid action.

The events which invariably concur in fever then are a certain deviation from the healthy state in the nervous and the sensorial functions — a certain deviation from the healthy state in the circulating functions, and a certain deviation from the healthy state in the secreting and excreting functions — in these must be a deviation from the three circles before fever can exist.

Such then are the phenomena of fever. But it is not the invariable ~~of a~~ concurrence of a particular number of events, that is alone sufficient to constitute fever: to this must be added invariable concurrences in a particular order. Derangement in the functions of secretion and excretion, never comes first in the series of derangement — in the nervous and sensorial functions, never comes last in the series of derangement — in the circulating functions never comes either the first or the last in the series, but is always the second in succession — the order of events then is, ~~the~~ first derangement in the nervous and sensorial functions — this is invariably antecedent — secondly, derangement in the circulating function; this is invariably sequent — and thirdly, derangement in the secreting and excreting functions; this is the last result in the succession of morbid changes. No other disease exhibits the same train of phenomena in the same order of succession. In inflamation some of the phenomenon are the same, but the order in which they occur, not the same. And this affords a clear and universally applicable mark of distinction between fever and inflamation. In inflamation there is similar derangement in the secreting and

excreting functions; there is also sometimes similar derangement in the circulating function: but the derangement in the nervous and sensorial functions is seldom if ever similar. The derangement which does take place in these latter functions, while it is apparently different in kind, is invariably different in the order of its concurrence. In pneumonia, in enteritis and in hepatitis, the spinal cord and the brain are never the organs in which the first indications of disease appear — the earliest indications of disease that can be discovered have their seat in the affected organ itself — It is only after the disease has made some progress that other organs and functions are involved; and apparently the last to be involved, and certainly the least to suffer, is the nervous system. But though in the present state of our knowledge we are not justified in considering fever and inflammation the same yet the invariable perhaps the constant connection between them is a fact of the utmost importance to be known, and requires to be incessantly before the view of the practitioner. But of the system of organs that are already affected in fever, some may be more and some may be less diseased; and this gives rise to the various external characters of the disease — but not only is one system often more affected than another, but sometimes one organ of one system. And these different degrees of affection in these different systems are variously combined and modified.

Febrile diseases have been commonly divided into Idiopathic and Sympathetic. If the views of Dr Smith, however, are correct, this division is liable to the fundamental objection that the second

action are not fevers but inflammation. Of the Idiopathic Fevers two great divisions have been made, one comprehending intermittant or the other continued fevers; a division founded on the occurrance of the tracing of the phenomena in an intermittant or continued series. Intermittant fever is further divided into Intermittant and Remittant; the intermission is the same, being said to be complete in the one, and incomplete in the other. What that condition of the system is which in forms of fever that are thus mutually convertable causes, one to persist in an uninterrupted series, another to remit, and another after disappearing for a time to recur in distinct and regular paroxisms is wholly unknown. Sydenham indeed cuts the not, and removes the difficulty at once. Speaking of the return of the fits in an intermittant he replies, to the inquiries into their cause: "I would fain know why a horse comes to his growth in seven years, and a man at twenty one; or why some plants flower in May and some in June. I am persuaded that the progress of nature is as certain and regular in this case as in any other, and that the matter of a quartan and tertian ague is subject to natures laws and governed by them as any other bodies whatever". Although the Doctor admits the regularity of nature in the production of disease, no less than in the maintenance of health, yet he thinks the point in question is not clearly one of those ultimate facts into the reason of which it is wholly vain for the human mind to inquire. Hitherto however no one has appears to have hazarded an opinion on the subject, and Pathology affords no clear light to enable us to determine whether the febrile circle of organs

is similarly affected in both. Of the endless variety of continued fever, Dr Smith thinks they differ only in intensity; and classes them all according to this principal of arrangement into two – Synochus the mild, and Typhus the severe form – the former he again subdivides into two sections, Synochus Mitior and Synochus Gravior, and the former into Typhus Mitior and Typhus Gravior. It would be highly interesting to follow the Doctor in treating of these different modifications of fever, to notice in each both the phenomena which form the assemblage and order in which they succeed each other, but for reasons sufficiently obvious it will only be in our power to do this in relation to the ordinary form of fever, of this country, in its mildest cast – Synochus Mitior – The first symptom which denotes the commencement of this form of fever is a loss of mental energy; this symptom is generally overlooked both by the patient and attendant, but if he would be careful to analyze his sensation he would find that the first indication of disease he felt, was a want of power to conduct his ordinary mental operations with ease and vigor: closely connected with the mental weakness, is the loss of energy in the muscles of voluntary motion, hence lassitude is the result: the next symptom in the order of succession consists in an uneasy sensation, which our author denominates febrile uneasiness – it is restlessness. In all diseases it is this which makes the sufferer on his midnight pillow exclaim – "O that it was morning!" – and in the day, "O that it was night!" Soon after these symptoms positive pain is felt – first in the back or loins and then in the limbs – the countenance at this time expresses dejection – the colour of the face is pallid and the features are

momentary shrunk — the skin ~~partaken~~ partakes in a remarkable degree of the delicacy which so early shows itself in the muscles of locomotion: this is indicated in a striking manner by its increased sensitiveness to cold: there is no positive abstraction of caloric, but it arises from an internal cause, and depends upon an altered state of the sensibility of the nerves. All the symptoms now enumerated are clearly referable to derangement of the function of the spinal cord and brain; there is as yet no affection of any other organ obviously, or at least much developed; For while the circulation languishes with the diminished energy in the sensorial functions, the loss of power in the muscles of locomotion. In a short time however the circulatory and respiratory systems become affected: the pulse being preternaturally accelerated, and the breathing shorter and quicker than natural; and now, the skin, which before was cold, becomes preternaturally hot. this depends upon ~~the~~ an actual augmentation on temperature in a manner which we are at a loss to determine. Immediately the circulation is excited, the functions of secretion and excretion being deranged - the mouth is now dry and parched, the tongue begins to be covered with a thick fur — thirst comes on — the secretion of the liver, stomach, pancreas and of the whole alimentary canal becomes vitiated, as is proved by the unnatural quality colour and fœtor of the evacuations — the urine is likewise altered in appearance, and the skin is not more remarkable for the sense of heat, than for that of dryness and harshness, which it communicates to the touch.

At this period then the fever is fairly formed — the febrile circle is now complete — any thing more that happens is referable

degree, and to duration, and must be the result of one or the other of these circumstances, or of their combined operation. The progress of this disease consists in increasing mental and corporeal weakness, increasing pain in the back, loins, and limbs — increasing heat of the skin, acceleration of the pulse and general febrile uneasiness, together with the occurrence of pain in the head, and progressive derangement in the functions of secretion and excretion. With an occasional exception, this form of the disease always terminates favourably; and the first indication of returning health is remarkably uniform; it is almost always by a longer and more tranquil sleep. The patient is observed to lie more still and on awaking from his sleep he spontaneously says that he feels better. The pain in the head and limbs is much diminished — the countenance becomes more animated, its natural expression returns — the tongue begins to clean; and after this state of the system has continued for two or three days his appetite returns. Mean time the pulse usually sinks about ten beats below its highest point at the height of the fever — it generally however remains quick for some time, generally during the period of convalescence. In the mean time the appetite becomes keener than natural — the strength gradually improves, and in a short time the patient is restored to his usual health and vigour. —

If I understand the authors views of Synochus Gravior, it is merely the transition of a mild case of fever into a severe one; or the progress of a case severe from the commencement — both depending upon certain changes which take place in certain internal organs.

These changes occur with great regularity – the organs in which they take place are always the same and the symptoms by which they are denoted uniform. The organs affected are the Spinal cord, the brain, the membranes of both – both the mucous membranes of the lungs, and the mucous membrane of the intestines. The symptoms accordingly divide themselves into the cerebral, thoracic, and abdominal there is however a fourth order in which all the organs appear equally involved, in which the general affection is intense, and which may therefore be appropriately called mixed. I have not time nor will the occasion permit me to dwell at length upon the varying degrees of Synochus Gravior – all I can do will be merely to hint at them –

Synochus Gravior with cerebral affections occurs under two degrees of intensity – when the cerebral affection is moderate it may be termed sub-acute, when great acute. The first is indicated by pain in the head more or less severe – this however is not always present; in that case giddiness is the substitute; if both are combined, it indicates a more severe affection. 2. The heat of the skin remains considerably above the natural standard, and is generally greatest where the seat of the pain is fixed. 3. The dull and heavy expression of the eye is greater than in the milder forms of fever, the eye at the same time becomes preternaturally sensible – cannot bear a strong light. 4 There is usually a corresponding increase in the general sensibility: a loud noise is invariably distressing to the patient; and if long continued, greatly aggravates all the symptoms. 5. As long as the pain of the head, the giddiness and the increased

sensibility continues, there is invariably a want of sleep. 6. And now, sometimes closing the symptoms, but usually being the first harbinger of another, delirium appears. Delirium is usually first observed when any slight sound rouses the patient from that disturbed slumber, which is the only substitute allowed for sleep. The delirium is seldom violent and long continued, but when present is like the talking of a person during sleep in a disturbed ~~sleep~~ dream. 7. The pulse during all this time may not be much quicker than in the mild form, and the state of the tongue and of the evacuations does not materially differ.

Such is the train of symptoms when the brain becomes prominently affected. These symptoms continue without intermission, and with little change for several days: at the end of this period however, a remarkable change takes place; an entirely new train of symptoms take place, which are different, and which indeed present a striking contrast, according as the patient is destined for life or death. If it be for life, that sleep, of the long absence of which we have already spoken, returns, and nothing can more truly express its character, says Dr Smith than its familiar name, balmy and healing in its influence. From two or three hours of such slumber the patient generally awakes a new being. The febrile uneasiness is now much diminished; the head ache is greatly relieved, and the skin is cooler and softer; the pulse is generally a few beats slower than before and the tongue shows a disposition to clean: these favourable changes gradually increase – the sleep becomes longer and more refreshing; the eye is clearer and more natural – the skin continues cooler and softer, and from this period if no

untoward event happens the convalescence proceeds as in the usual way.

If on the contrary the case proceeds unfavourably, a totally new train of symptoms at this period sets in. In the first place the pain of the head obviously and somewhat strikingly diminishes: and if giddiness was present it is no longer perceptible: or if any uneasiness remains it is rather a sense of heaviness and dullness than pain. Simultaneously with the disappearance of the head ache is a remarkable diminution of sensibility. The mind is duller and more heavy; the patient may be roused to answer with tolerable coherence if spoken to, but if left to himself he feels confused and stupified. It is at this time that delirium if it appears at all most frequently comes on; there is generally moaning or incoherent muttering during the short but interrupted slumber which forms the substitute for sleep. The pulse at this time generally rises 10 beats, and is commonly weaker. Now too, signs of disease in the chest and abdomen are almost always to be distinguished. If there be not cough there is generally short and hurried respiration &c. From what has now been said relative to the symptoms of Synocha Gravior complicated with cerebral affection the rest may be anticipated. It is not often that the disease is turned back, or its course stayed after it has made this progress: when it does occur, the amendment both in its origin and progress is very similar to that of the favourable change, which has been already described. Passing over the symptoms of Synocha Gravior with acute cerebral affections I come to

Notice briefly

Synochus Gravior with the Thoracic affection.

The symptoms to which an affection of the mucous membrane of the bronchia gives rise, are pain in the chest, sometimes severe, sometimes only slight — sense of stricture, or inability to expand the chest by a full inspiration, without pain or uneasiness: cough frequently agravates the pain — sometimes dry sometimes accompanied with frothy mucous expectoration: respiration sometimes slow and heavy, at other times on the contrary short and quick: never natural: the altered respiration is very frequently accompanied with that peculiar noise in breathing, which is termed mucous rattle. The pulse in the commencement may not be above 80 or 90; it is hardly ever sharp; it is generally weak — but whatever other character it may possess, it is almost always soft.

Synochus Gravior with abdominal affection.

One of the organs always involved in disease, in a greater or less degree in fever, is the mucous membrane of the stomach and intestines. If the abdominal affection be severe from the commencement, in addition to the ordinary symptoms of fever, there will be present nausea, sometimes retching, and at other times vomiting. The bowels are at first constipated, but afterwards fall into a contrary state: and are looser than natural: and generally with these symptoms there is more or less pain of the abdomen upon pressure, and especially upon pressure in the epigastrium, this however after a period diminishes, and sometimes the patient does not complain of it at all even when the abdominal affection is most intense. In these

abdominal cases the tongue is preternaturally red. Sometimes this increased redness prevades the whole tongue, at other times it is confined to the tip; it afterwards however becomes darker and of a duller tint. the lips and teeth become covered with a black sordes, and the body of the tongue is often loaded with a thick fur. The abdomen sometimes becomes swelled and tympanitic, and at other times is as soft as in health, through the greater part of the disease Dr Smith has never found the pulse, in this affection, possessed of any distinctive character. Its common range however is from 80 to 100, beyond which it seldom rises in the acutest cases, until near the termination of the disease, and it is generally soft. I have already spent so much time in talking of Synochus Gravior - complicated with some local affection, as to preclude the possibility of going further into detail in relation to the other forms of fever. I have only time to say a word or two on the causes and cure. To conclude -

The causes of fever are of two kinds - first, those which immediately produce the disease - and secondly those which bring the system into a condition capable of being affected by the first - the former are called the exciting and the predisposing causes: a third has been spoken of in relation to this as well as to other diseases, namely, the proximate cause. But what is really meant by the proximate cause, if the term has any meaning, is the condition of the organ or of the system, produced by the operation of the exciting cause - this term therefore designates an effect, not in any proper sense a cause - it relates to the disease itself not to the act which produces it.

The most general exciting cause of fever, is a poison formed by the decomposition of organic matter. The conditions which are generally required for vegetable or animal substances to give rise to this decomposition, are heat and moisture. heat generally from 80 to 100. In relation to the predisposing cause of fever, whatever diminishes the vigorous action of the organs, impairs ~~their~~ their functions, and weakens the general strength of the system, is capable of becoming a predisposing cause of fever. Of all the predisposing causes however, the most powerful is the continued presence, and the slow operation of the immediate or exciting cause.

Of the treatment of Fever.

The only morbid condition of fever of which we have any knowledge, and over which the medical art has any control, is that of inflamation. Altho', as has been stated, inflamation be not the primary febrile affection, as far as regards the order of events. yet, it is at least the primary affection, as far as regards the treatment, if it be not the sole affection which admits of treatment. The remedies proper for febrile inflamation do not differ from those which are adapted to ordinary inflamation, but they differ materially in the mode in which they ought to be applied, and the extent to which they ought to be carried. They can be understood neither in their mode nor measure until the following questions are determined. Viz. What is the precise object that should be aimed at in the treatment of fever? What is it which it is most important to do, and which it is in the power of medical art to accomplish? We answer most explicitly

that the object to be aimed at in practice, is to prevent or to remove inflamation. Accomplish this and the fever will not be cured at once, it will still go on for some time, but it will come sooner to a close, and it will proceed safely and mildly to a termination. Fail to accomplish this, and the fever however mild at first, will increase more and more in severity, until it becomes truly formidable, and death takes place at last in consequence of the destruction of the organs by the process of inflamation.

Now, what is the proper remedy to prevent this state of things? Bleeding — Bleeding in fever cannot be performed too early — The very first moment of excitement, could that be discovered, is precisely the moment when the employment of this powerful remedy would produce the greatest effect. The abstraction of blood must be carried to the extent of subduing the inflamation — there is no other limited quantity to be taken, but that which is adequate to subdue the inflamation. To attempt to measure the quantity by drachms or ounces is wholly vain; because, if the remedy be properly employed, ~~and~~ the quantity will vary in every individual case. To take an ounce more than the subdual of the inflamation requires, is injurious — to take an ounce less is still more pernicious. To take the quantity necessary to accomplish, and no more, is to use the lancet — that powerful instrument, so dangerous in rash hands and no less dangerous in weak — with the decision and discernment of a master.

I repeat, mere relief of inflamation is nothing; to render

a severe inflamation a less severe inflamation is to do nothing, because, the less severe inflamation may be ~~certain~~ fatal as certainly as the more severe; the inflamation must be subdued, or the case, if not wholly lost, becomes dangerous and doubtful. A due impression having been made upon the inflamation by bleeding, the subsequent treatment should consist of purgative medicines given to the extent of producing three, or a most, four, stools, in the twenty four hours. The best purgative consists of one or two grs. of calomel, with six or eight of Rhubarb, repeated every night, or every other night, followed in the morning by a dose of castor oil, or by the common senna draught. Cold sponging if the skin be hot — acidulated drink, if there be thirst — perfect quiet — a dark room — a noiseless step — a cheerful countenance and no words; this, with three tea cups full of thin arrow root, or gruel, in the twenty four hours, comprises all else that will be required until the period of convalescence.

The modification of the treatment in cerebral affection consists in bleeding proportionably large, and early as it is copious, and until the inflamation is subdued — In this affection cold or evaporating iced lotions will be of considerable service — the cold dash however will most effectually aid ~~in~~ in subduing the inflamation — it consists in pouring columns of cold water upon the head, in a continued stream, from a height of from six to ten feet.

Of the modification of treatment in thoracic affections. Bleeding cannot be here used to the same extent as in

cerebral affections. But tartar emetic will here most effectually aid in controlling the action of the heart and arteries, and is in the estimation of Southwood Smith and Laennec as effectual in the thoracic affections as blood letting and the cold dash are in the cerebral. The mode in which it is most efficaciously administered is in doses of two grains, dissolved in an ounce of water, and repeated every second, third, fourth, or sixth hour, according to the severity of the case.

In abdominal affections beside general bleeding, one may cover the abdomen with leeches, apply an emollient poultice, and keep up the discharge by oleum terebinthinae.

I have perhaps, gentlemen, let my pen run on too long enough, indeed my time does not permit me to go further into the subject. I cannot conclude better, perhaps, than in the closing paragraph of our author.

"Many are the dark spots that still remain upon this part of the field of knowledge; many are the labours that must work long and skilfully before they are removed; — while, if the successful investigation of medical science in general, contribute largely to the well being of man, the successful study of this branch of it, must be pre-eminently ~~useful~~ beneficial."

Before I take my final leave of you, gentlemen, permit me to ~~say~~ number among the happiest moments of my life a portion of that period which has been spent in receiving medical instructions at your hands. Accept my most grateful thanks, for those sound principles of pathology and practice which you have been most careful to instil into my mind, with others of your classes: and cheer yourselves with the hope and the gratulation, that you have performed your duty in a most laboriously, faithful, and persevering manner. Long live your names

and the memory of your services, shall remain embalmed in my heart; and when the frosts of age shall have nipt the bloom of youth, it will be the kindest recollection of my life, that a portion of that youth was spent in halls where eloquence spoke to the eye, the understanding and the heart. And if it should be your pleasure that I should go forth to the world under your auspices, it will ever constitute my pride, my pleasure, and my highest boast, in youth or age, in weal or woe, in pleasures light or sorrows gloom, that my Alma Mater is of the renowned University of Maryland

An Inaugural Dissertation on Cynanche Trachealis,

Submitted to the Examination of the Trustees and Medical Faculty of the

University of Maryland,

On the first day of March, 1832, for the Degree of Doctor of Medicine,

By

Henry Skinner,

of Baltimore, Md.

"Dii avertite talem pestem urbis."

Nathaniel Potter M.D. Professor of the Theory and practice in the University of Maryland.

Dear Sir

In dedicating the following production to you I consider myself discharging a solemn obligation, not due you only in consideration of your high talents and emoluments as a Physician, but for the many marks of friendship and friendly advice given me during the prosecution of my medical studies & I am further induced to make this public acknowledgement when I reflect that whatever progress I have made towards a proper definition and treatment of the subject of the present Essay, has been derived principally from you. Except Sir, my warmest wishes for the long continuance of your health and may you long live as a lasting Monument to our character and stability to the University of Maryland.

I am, with feelings of Respect
Yours truly
Henry S. Miner

To

Professor Richard Wilmot Hall. M.D. Prof. of Obstetrics In the University of Maryland.

Dear Sir

In leaving the Halls of my Alma-Mater I feel as if I should be guilty of ingratitude, and also do violence to my feelings were I to neglect this opportunity of publicly acknowledging my high opinion of you as a teacher and lecturer, and also to return you my sincere thanks for the many marks of friendship and paternal affection bestowed while attending your erudite lectures = Therefore Sir, be pleased to accept of this imperfect essay, as a mark of respect and friendship, and also my best wishes for the continuance of your health, and that you may long continue the ornament and safeguard of our Profession and a blessing to the afflicted, is the sincere wish of

Your friend and

Obliged Servt Henry Skinner

To

Nathan R Smith. M.D. Professor.

Dear Sir

In prefixing your name to this imperfect essay. It is not my intention to offer the incense of adulation, which your reputation does not need and your merit so eminently deserves, but it is for the purpose of expressing my gratitude for the many marks of kindness and attention which you have bestowed upon me while pursuing under your direction the study of that profession to which you are an ornament and pride – Permit me especially to express my gratitude for the advantages derived from the numerous surgical operations which I have had the opportunity of witnessing, in the performance of which no Man excells you in dexterity, judgement, or decision.

Permit me to express my anticipation of that period when the name of Physic shall no longer be pointed to as the most distinguished Surgeon of America, but when an equally, if not more elevated niche shall be carved out in the temple of Fame for him

who now equals him in every thing, except that rep-
-utation which professional success is fast acquiring
for his more youthful competitor.

I remain Dear Sir, Your youthful friend
Henry Skinner

Cynanche Trachealis. Or Croup.

Croup, or the acute inflamation of the mucous membrane of the trachea, was either little known or surely not described with any degree of clearness by the ancient authors. The first regular history of it is to be found in the letters of Martin Chise, 1794. Dr. Home of Edinburg made it known to the practitioners of this Country by his "Inquiry into the Croup" published in the year 1765, but for fullest, and most complete account of the disease, which has since appeared we are indebted to Dr. Cheyne.

Symptoms.

This disease sometimes comes on very suddenly and soon assumes its most violent stage, even in a few hours. But by far the most common approach of this disease is gradual, and is then attended with ordinary symptoms of pulmonary Catarrh. A dry and hoarse cough, with difficulty of breathing, and a change of voice, are generally the first intimations of its invasion. These symptoms may continue for several days before the disease assumes its characteristic form, and violence. It is usually attended with more or less febrile excitement from the commencement.

In a longer or shorter time the respiration becomes more difficult and distressing, the febrile symptoms become more plainly marked – the voice more indistinct, or even whispering, pain is now felt in the larynx, and the cough becomes sonorous. All the above symptoms now assume a more alarming and distressing degree of violence – The countenance becomes flushed, eyes prominent, injected and heavy, the pulse frequent, tense, and quick. The skin dry and hot and the respiration difficult and anxious. Inspiration is especially difficult and accompanied with a very peculiar ringing or stridulous sound – At this stage of the disease the cough is commonly dry, but in some instances there is a copious secretion of an albaminous fluid in the larynx from the very commencement, and in all cases this secretion occurs in the advanced stage of the malady. When the disease is not promptly terminated or arrested, and it is hastening to a fatal termination, the little patient manifests the utmost degree of anguish and suffering, the head is thrown backwards, the mouth kept open; the eyes half closed; the voice is extinct, the lips livid; the face pale and covered with large drops of sweat, slight coma ensues; the extremities become cold and clammy;

nd death closes the agonizing scene. The duration, rogress and termination of this disease is however very variable. Some cases but a few hours elapse between the commence-ent and fatal termination of this disease. In other cases t may be protracted to several days and even weeks, as-uming rather a chronic character. But as a general rule he time commonly occupied by this disease is from two five days.

Causes - Predisposing -

Cynanche Trachealis is one of those inflammatory diseases which a hereditary predisposition not infrequently appears be present. "It is often founded on hereditary predispositions, Gout and phthisis, and this proclivity to tracheitis does t always depend on a scrofulous diathesis. This fact as often been a source of error, because several children in he same family are affected at the same time, they are pposed to have contracted it by Contagion." (Prof. Potter)

Exciting Causes.

The most most usual exciting cause of croup, is cold and particularly exposure to a damp and humid atmosphere. t prevails therefore chiefly in winter and Spring and is more mmon in the cold and temperate climates than between

the tropics. Children who have once had an attack of Croup, are liable to have it renewed on the application of the slightest causes. A common Catarrh in such constitutions, will often be attended with Croupy symptoms, until the third or fourth year of life. Cynanche Trachealis is also said to have prevailed epidemically. It is said that this disease is most apt to prevail after, or during the prevalence of Measels, or Scarlatina. There appears a peculiar apetitude, during convalescence from this disease, to have it re-excited by the influence of cold.

Pathology.

That Cynanche Trachealis strictly belongs to the class of Phlegmasia, is I believe but rarely doubted, except by those who have kept pace with the progress of pathological science. It is essentially an inflamation of the mucous membrane of the superior portion of the respiratory tube. This pathology is further confirmed by the known character of its most common exciting cause, by the direct evidence of the symptoms and above all, by the appearances discovered on post mortem examinations. Bretonneau in France, and MacKenzie in England, have made known their observations recently, which go directly to prove this view of the nature of the disease. These writers assert that the inflamation commenced

in the fauces and tonsils; and thence descends in the trachea; a progress of the disease which may be verified by occular demonstration. this fact has also been confirmed by many American Physicians, who declare that they have witnessed the same progress of the disease In many instances the inflamation passes downward into the bronchia, and sometimes even into the small ramifications giving rise to the simultaneous existence of acute bronchitis and laringeal inflamations. This renders the disease more terrible, for the danger is increased in proportion as the inflamation extends down into the bronchial ramifications. For indeed when this is the case the disease rarely terminates happily. The termination of this disease, is also various, and and depends in some degree, on the violence of the previous inflamation. In those cases attended by a very high grade of inflamation, the disease is most apt to terminate in the formation of a false membrane, which according to the latest and most accurate observations appears to consist of an albuminoid secretion. This membrane is insoluble both in cold and boiling water, but entirely soluble in a solution of caustic Kali

By incineration it yields dicarbonate of Sodium, phosphate of lime (Schuilging). In other instances it terminates in the secretion of mucopurulent matter of an opaque and yellowish appearance, without the formation of the above described membrane. Other causes again, and perhaps the most common of all, the inflamation produces neither false membranes nor a purulent opaque matter; but terminates in the production of a very viscid limpid and frothy mucous. The period at which the false membrane is formed is various, In some cases it has been found, when the disease had lasted but 24 hours, other cases again have been recorded where several days elapsed before the membrane was formed, occasionally a small portion of larynx is found coated with this concretion, and in some instances it has been found to extend into the bronchia, and even its smaller divisions. Death is usually produced by an obstruction to the intromission of air into the lungs, either by a spasmodic closure of the glottis; or an occlusion of this aperture by tumefaction of its sides: or by the formation of false membranes, or finally, by an excessive quantity of a very

ropy and viscid mucus lining up the passage &c — 7.

Prognosis.

Cynanche trachealis cannot but be considered a very dangerous disease, unless efficient and proper means be early and judiciously applied — Under the present improved pathology and treatment, the proportion of fatal cases is greatly diminished — As I have before said the danger of the disease is greatly in proportion to the violence of the inflammation. The more sudden the attack, when attended with strong febrile excitement, the greater in general is the danger. The shrillier and more sonorous the cough the more reason is there to apprehend danger. I would not fail however to observe that the prognosis in this disease is uncertain, and fallacious. Sometimes the symptoms yields and promise a speedy convalescence. When a violent exacerbation will supervene, and quickly consign our little patient to the cold and silent tomb — On the other hand death may appear impending: when the expulsion of the membrane will relieve all the urgent symptoms, and restore our little patient to a perfect state of convalescence, and finally to wonted health —

Diagnosis.

There is only one disease with which Cynanche Trachealis, is liable to be confounded, Viz Spasmodic, or false croup, but from this disease it may be distinguished by C. Trachealis, generally coming on gradually with the common symptoms of Catarrh. Spasmodic croup always comes on suddenly. The former is generally an inflamatory disease, the latter is not. Cyn. often attended with remissions but no complete remissions. Spasmodic Croup is often attended with complete intermissions of considerable duration. Cynanche always attended with a hoarse sonorous cough, and generally, with a copious secretion of viscid, or frothy mucus, Spasmodic Croup is rarely accompanied with cough sometimes none at all and is always dry. The peculiar ridulous sound of the cough and inspiration, so characteristic of Cynanche, does not exist in Spas. Croup. In Spasmodic Croup the pulse is small and contracted and the heat of the skin is natural, In Cynanche, the pulse is frequent, quick, and tense, and the temperature of the body is always above the natural standard, except perhaps at the fatal conclusion of the disease, When the

surface becomes cold, and covered with a clammy perspiration

Treatment.

From what has been said above in relation to the Pathology of Cynanche Trachealis it must be evident what course of treatment should be observed the indications are. First to lessen the general and local inflamatory action, Secondly to promote the discharge of the viscid and Coagulable secretions which are lodged within the superior portion of the respiratory tube. For the fulfilment of the first of these indications, it is obvious that it will require the most prompt and energetic antiphlogistic measures. He who neglects or forgets this indication and trusts to the innumerable imposicle nostrums which have from time to time been extolled for their specific powers will rarely fail to experience their insufficiency and lose many lives, which by proper and judicious means might have been saved.

Venesection, or

Bloodletting

The remedy upon which we should place our chief reliance is Bloodletting, in conjunction with external vesicating or irritating applications to the throat. It is in this however, as in most other phlegmatic affections that the good effects of the lancet are confined to the early period of the disease. When we are called to a patient, with manifestations of high febrile excitement, and active inflammation is evident, a vein should be immediately opened and blood should be drawn until an approach of Syncope be induced. In most cases when this is done, all the distressing symptoms usually subside. If in the course of an hour or two, the difficulty of respiration reappears, and the pulse be not soft and feeble, more blood should be drawn even until the approach of Syncope be again induced. In some cases blood will have to be drawn three or four times, in the course of twelve hours, before any decisive and permanent impression can be made upon the disease. Prof Potter directs that blood should be drawn from jugular vein in children of three or four years old, till the pulse flags, but when the child is very young, the rapid abstraction of blood is sometimes

followed by fainting which is fatal in very young subjects therefore he thinks blood should be drawn by leeches, as being decidedly preferable. As a local external application to irritate the parts, the oil of Terebinthena is perhaps as useful as any. When time will admit we should never neglect the application of Epispastics as highly useful auxilliaries —

Emetics.

After V.S. emetics are the most important remedies — the antimonial wine given in the dose of a teaspoonfull every half hour till it operates freely, will with the use of the lancet arrest the disease almost immediately — Indeed in the forming stage, characterised by hoarseness, a slight Mucerous cough, a fremitus of Antimonial wine, Tartar. Emetic of Sol Infl. Ipeca; or Ox Scilla which will operate four or five times, generally puts a stop to the disease, without the necessity of Venesection Assisted by a Mustard poultice to the throat and a dose of Calomel, they succeed in arresting it in one out of twenty cases (Dr Potter). In infants affected

with this disease, the occasional employment of an Emetic is highly important. In those violent cases, which manifest a highly inflamatory character, and in which the cough and respiration are dry in the first stage there is commonly but little advantage to be derived from the operation of an Emetic so long as the dryness of the trachea and Larynx remains. The administration of Emetics should always be assisted by the simultaneous use of the Warm Bath. The combination of an Emetic which I would prefer is Calomel & Tar. Antim. Six grs of Calomel with one fourth of Antim. to a child of from two to five years old. Prof Smith prefers calomel combined with Specac, and this no doubt forms a very excellent and efficient Emetic. When there is great insensibility to the action of Emetics Prof Potter advises a solution of the Bichloride of Mercury according to the following formula. ℞ Bichloride of Mer. ʒ8 Spirac dissolve fiss one ounce of Water give a tea spoonfull every fifteen minutes untill Emesis is produced. He says that this remedy has in his hands arrested the progress of the patient to the grave altho he had reached the confines of eternity.

Purgatives.

Purgatives should be freely employed in this disease and are indeed when properly used, very important articles in the treatment of this disease — They should never be neglected in the early part of the complaint. the bowels should be briskly opened and two or three evacuations should be subsequently procured daily, until the inflamation is subdued — When we wish an active Cathartic Calomel combined, or alone in large doses will generally answer the purpose — This is a favourite remedy with Prof Potter who says Calomel alone will generally succeed, but there are very few who will venture to give one or two hundred grains in a single night, which is indispensible, and can scarcely fail accomplish all we could desire — At the same time let me not forget to speak with regard to the Constitutional effects of Mercury — Many of the Continental writers seem to look upon it as the most effectual means we have for removing the local Tracheal inflamation. This was a favourite practice with the late Dr Rush. The constitutional effects of Calo — is also highly spoken of by many respectable writers — When the disease assumes some-

what of a chronic character, we should never fail to induce Ptyalism —

Warm Bath.

This remedy should never be never be neglected in the treatment of Cynanche, for it certainly is a powerful auxiliary — Employed along with remedies already mentioned its benefits are often considerable especially when the skin is hot and very dry — It should only in the early stage, as in the last stage the skin is generally wet with profuse perspiration, and the pulse weak and soft. A variety of Specifics have been offered for the cure of this disease; but none of them merits any attention. Since therefore mention of a few of them are posts on without comment Vi et Pol: Senega — Herpum Subpha et — It would be waste of time to mention the various other remedies of this kind, which have at times been practised and again abandoned — As well might we look for Specifics for the cure of Rheumatic Pleurisies, or gastritis as to expect to find one for Cynanche Trachealis —

To prevent the extension of the albuminoid membrane

which forms in the Trachea, Dr MacKenzie has used a Sol. of Nit. Argentine to the fauces, tonsils, Velum Palati, and Uvula. The Sol. employed by him is of the strength of a scruple of the nitrate of Silver to an ounce of water. Dr. Lacroix has recently mentioned the insufflation of finely powdered alum. With the view of expelling the false membranes, Emetics have have been recommended in the latter parts of the disease and the records of Medicine furnish many cases of their success. The same object too has been accomplished by blowing snuff into the nostrils by a small tube. As to the operation Tracheotomy with the expectation of detaching the membrane. I believe nearly all experience has decided against it, at all events it offers but a cold reward for our labour.

Now, Gentlemen, having finished that my first and imperfect attempt at an Essay, I would only beg of your indulgence for the many imperfections which it must contain, and let me indulge the hope that you will not disregard it altho' it cannot be deserving any praise from you. I submit it knowing that much cannot be expected from him who with trembling and uncertain steps is yet lingering on the threshold.

Henry S. Rinner

Finis.

An Inaugural Dissertation On Phlegmasia Alba Dolens Puerperarum.

Submitted to the Examination of the Hon. R. D. Coxe. Provost.
The
Trustees And Medical Faculty of the
University of Maryland
On the first day of March — 1832.

For the Degree of Doctor of Medicine

By

William H. Farrow. Snow Hill
Maryland.

"Non oportet nos adhærere omnibus quæ audimus et legimus, sed examinare debemus districtissime sententias majorum, ut addamus quæ eis defuerunt, et corrigamus, quæ errata sunt —"

To

Nathan R. Smith, M.D.
Professor of Surgery, In the
University of Maryland.

Sir

Many considerations point out the propriety of dedicating to you the following production. Besides the debt of gratitude due you by all the republic of Medicine, for the many and important services you have rendered the Science, which as an individual I feel very forcably, obligations of a superior nature demand this tribute of respect from me. As a Preceptor and Teacher, from whose private as well as public instruction, I have derived most of the principles, which are to conduct me in the arduous task of alleviating the sufferings and afflictions of humanity, I am peculiarly indebted to you. Therefore Sir, accept my warmest wishes, for the long continuance of your health, and successful labours for the advancement of Science, and the Medical Character of our Common Country, which will ever predominate in the breast of

Your affectionate & grateful Pupil
The Author.

To

John S. Martin, M.D.

of

Snow Hill Maryland.

This Essay is respectfully inscribed, not only in consideration of his high merit as a Gentleman, a Friend, and a Physician, for which he is so justly esteemed by all his acquaintances; but also as a grateful tribute of thanks for the valuable instruction, and many marks of friendly attention, bestowed, while he had the direction of the early medical pursuits of his

Affectionate Pupil
And much obliged Friend

The Author.

To.

E. Geddings M.D. Professor of anatomy in the University of Maryland. Baltimore.

Sir

Permit me to dedicate this little essay to you as a testimony of my respect for you as a man of learning, and especially in acknowledgement of your distinguished character, as a Teacher of Anatomy.

I consider you a conspicuous instance, of what genius, industry, and honorable ambition will accomplish; an Example, which the American Medical Student should soon be proud to follow.

Although personally a stranger to you, I am happy and sincere in assuring you, of the respect of

Sir, your Obedient
and humble Servant
The Author

To

Maxwell McDowell, M. D.

Professor of Physiology. In the University of Maryland.

In consideration of his acknowledged talents as a Physician, and his high character as a Gentleman. This Essay is respectfully inscribed

By his Friend

The Author.

An Inaugural Dissertation On

Phlegmasia Alba Dolens Puerperarum.

In submitting the following Essay to the inspection of the trustees and Faculty of the University of Maryland, as a necessary step for obtaining a Medical degree, I cannot forbear following the example of many of my predecessors, in soliciting indulgence for the imperfect performance of a task imposed by necessity, and undertaken with much anxiety, and apprehension.

The variety of pursuits, which necessarily occupies the minds of Medical Students, must in general prevent him from paying such exclusive attention to any single subject, as will enable him to elucidate what was before obscure, or to throw many new lights upon what was already known. In general Therefore, he must content himself with the more humble office of arranging the observations and experience

of

of others, in such a manner, that the praise of industry may be granted him, although that of invention, or originality be denied.

Whilst so many sages and philosophers, have consumed a long and laborious life in exploring the recipes of Medical Science, new discoveries can scarcely be expected from him, who, with trembling and uncertain steps, is yet lingering on the threshold.

Phlegmasia Alba Dolens Puerperarum, has been a subject of much discussion, and has occupied the pens of some of the greatest Physicians and Pathologists of the present day. It would appear from their observations, that this singular phlegmasia affection is almost exclusively confined to females in the puerperal state; in a few instances it has been observed to attack pregnant women; and, in one or two cases, nurses, on losing their children, have been affected by it. Women of all descriptions are liable to be attacked by it during, and soon after childbed. But those whose limbs have been

pained or anasarcous during pregnancy, and who do not suckle their offspring, are more especially subject to it. It has rarely occured oftener than once to the same female. It supervenes to easy and natural as well as to difficult and preternatural births. It has, in many instances, attacked women who were recovering from puerperal fever; and in some cases, has supervened, or succeeded, to thoracic inflammation. It is characterized by a pale, tense, elastic, and extremely tender swelling of one of the inferior extremities; affording to the touch a sensation of numerous indurated nodules and ridges under the skin; and always attended with more or less fever, generally of a hectic character. As I have before stated Phlegmasia Dolens, is almost exclusively a puerperal affection, its most common period of attack varies between the fifth and ninth days after parturition. We find it asserted by some writers of great respectability, (Good,) that this disease has never been known to affect any other parts of the body than the lower extremities; but Barns and some other authors

mention instances of its occurrence in the superior extremities; but from my own experience I can say nothing in favour of this latter assertion, although instances may have occurred.

Symptoms.

In general the first symptoms which presents themselves are; pain and stiffness in the groin of one side, preceded or accompanied by chills, or rigors, followed quickly by the ordinary train of peripheral symptoms. Instead of beginning invariably at the upper part of the limb, and descending to the lower, this complaint has been known to begin in the foot, the middle of the leg, the ham, and the knee.

From whatever points the disease may take its origin, the swelling more or less rapidly extends itself over the whole limb, and continues to increase untill the extremity becomes enormously distended, and extremely painful to the touch. When we view the limb the swelling presents an even and uniform surface; but when the hand is lightly passed over it, a number of hard ridges and little indurations are obvious, and apparently imme

diately under the Skin. The appearance of the Skin is pale or white, smoothe and glabrous, and is preternaturally warm to the touch. In most cases the swelling extends to the labium pudendi of the affected side, while the labium and contiguous parts of the opposite side are entirely free from tumefaction and pain. More or less tenderness is generally felt in the iliac region of the affected side, and the track of the round ligaments is especially apt to become painful or tender. Indeed some authors consider this tenderness in the course of the round ligaments as a pathognomonic symptom (Tyre). The swelling of the limb varies both in degree, and in the space of time requisite for its full formation. In most instances it arrives at double the natural size, and in some cases at a much greater. In lax habits, and in patients whose legs have been very much affected with anasarca during pregnancy, the swelling takes place more rapidly than in those who are differently circumstanced, it sometimes arrives in the former class of patients, at its greatest extent in 24 hours, or less, from the first attack. In general the breast becomes

flacid, and the secretion of milk is in part, or even entirely suspended. When the disease has reached its acme, the skin of the affected side is much whiter than that of the sound side; and its temperature considerably augmented. This disease is always attended with considerable irritative fever, from its commencement, and the patient is generally restless and uneasy. Writers the disease has been described as affecting only one of the inferior extremities, and as terminating by resolution, or the effusion of a fluid that is removed by the absorbents; but, unfortunately, it sometimes happens, that after it abates in one limb, the other is attacked in a similar way. It also happens, in some cases, that the swelling is not terminated by resolution; for sometimes a suppuration takes place in one or both legs, and ulcers are formed which are difficult to heal. In a few cases a gangrene has supervened. In some instances the patient has been destroyed by the violence of the disease, before either suppuration or gangrene have happened.

Diagnosis.

The only affection with which Phlegmasia Dolens, is likely to be confounded is Œdema; but the diagnosis between these is neither difficult or uncertain. Position produces no change in the swelling, as is the case in Œdema, neither will the surface pit under the pressure of the finger; but above all it may be distinguished by the irregular and uneven surface, which phlegmasia dolens presents, when the hand is lightly rubbed over it. This is also an extremely painful affection, but in Œdema there is no pain, even upon pressure.

Prognosis.

The duration of this disease is uncertain and variable. It rarely however, terminates under two weeks; and it may be prolonged to the fifth week, and even a longer period. At the time, when the disease is about declining, slight sweats break out over the whole surface of the body, and the urine deposits a reddish sediment; whilst the fever progressively declines. The swelling always very gradually abates, and the leg very rarely returns to the size of the sound

one. Some degree of stiffness of the muscles of the leg usually remains after the total subsidence of the disease; and the skin for some time continues to be less moveable on the subjacent parts than in the sound state. Sometimes though very rarely, the inflammation terminates in suppuration; and when this happens, the cellular membrane sloughs out from between the skin and muscles, as in the suppuration of Erysipelas. This accident is always attended with the utmost danger. However upon the whole, Phlegmasia Alba Dolens Puerperarum, cannot be considered a fatal disease.

Of the Etiology & Nature &c.

In speaking with reference to the etiology and nature of this disease, writers have expressed a great variety of opinions. By many the disease has been ascribed to a metastatic transference of the lacteous secretion from the breasts to the affected limb giving rise to the deposition of milk in the cellular tissues of the extremity. The supporters of this opinion were Puzos, Levret &c. Others again have ascribed the disease to an obstruction of

the Lymphatics at the brim of the pelvis, by the pressure of the Child's head during parturition, giving rise to over distention and consequent rupture of the lymphatics, whence effusion and accumulation of Lymph in the glands and cellular tissue of the limb ensue. This was the favourite doctrine of Mr White of Manchester. Denman and others maintain that phlegmasia dolens consists essentially in lymphatic inflammation, commencing in one or more lymphatics glands in the groin, and thence extending along the lymphatic branches untill the whole limb becomes affected. The primary inflammation of the inguinal gland is excited, he thinks, by acrid matter, which is absorbed from the Vagina. Dr Hull conceives the disease to consist of inflammation of the muscles, cellular tissue, and inferior surface of the Cutis; giving rise to a sudden effusion of serum and coagulable lymph into the cellular texture of the extremity; and according to Cossack, the inflammation occurs in all the structures of the limb — in the bloodvessels, Absorbents, Muscles, cellular membrane &c. Lately Dr Davies of London has published some observations tending to shew

that phlegmasia dolens, is the result of an inflammation of one or more of the large veins terminating in the formation of artificial membranes an other obstructions within their cavities, whereby the free return of blood from the extremities is prevented. But this opinion is equally absurd, and hypothetical, as has been abundantly shown, both by Dewees, and Houston.

Pathology.

Notwithstanding the many hypothetical and conflicting views of the profession, with regard to the pathology of this disease, or whatever we may think of the mode or origin, or the location of the morbid condition which constitutes this affection; there can be no doubt that it is essentially an inflamatory affection; and I think we may venture to say, with some confidence that the whole system of lymphatic vessels of the limb is engorged and greatly distended with lymph, at the same time that some effusion may occur in the subcutaneous and intermuscular texture. I believe this disease to consist in a complete engorgement of the whole system of lymphatic vessels of the affected limb; produced by an inflamed condition of the different conglobate glands

through which the chief lymphatic vessels have to pass, on their way from the affected part, to the thoracic duct. This inflammation may occur in one or more of the glands, or first in a principle lymphatic trunk, and thence extend to the glands. Tyre, Capuron, Gardien, and Denman entertained similar views of the Pathology of this disease.

The Causes. Repeated

The Causes of this disease may be from the glands or lymphatic trunk being bruised by the passage of the Childs head through the pelvis during labour, or from exposure to Cold, or from the absorption of acrimonious matter, whereby the internal surface of the lymphatics themselves may be excited to inflammation, and thence extended to their appropriate glands; or the matter may be transmitted to the glands, and there excite inflammation (Houston) —

Treatment.

I have now arrived at the last point of my subject; but it is by no means the least important. From the views I have taken of the pathology of this affection, it must be obvious that

its proper treatment must be decidedly anti-phlogistic.

Bloodletting.

Bloodletting both general and local, are absolutely necessary during the early stages of this disease. The vis a tergo should be at once adequately diminished, by an efficient abstraction of blood with the lancet; then the application of Leeches to the affected limb, will be particularly useful, more especially about the groin, and along the tract of the principle trunks of the lymphatics. The direction of Dr. Dewees that the Leeches should be dispersed over the limb, is a very judicious one, and should never be neglected, as otherwise extensive and troublesome ulcers, may be the consequence of their bites. It is sometimes the case, that the febrile reaction, although not apparently very vehement, yields with considerable difficulty, and will require many Bleedings, before the pulse can be sufficiently reduced.

Many cases have been mentioned by Dewees and Eberle, where five or six Bleedings were required, before an adequate impression could be made on the pulse. I have seen one case, that required four bleedings. —

Purgatives.

From this class of Medicines is afforded also a powerful auxiliary, in the treatment of this disease, and should be freely used during its active stage. A mixture of Senna Manna and Epsom Salts, affords a very suitable and efficient dose for this purpose. Dr. Dewees prefers the following mixture* We are informed that a mixture of Magnesia with Tinc: of Colchicum, was used by Ebele, with great benefit in one, and the only case in which he had an opportunity of trying it. It may be well to repeat his experiments, when an opportunity shall present itself. I am convinced from observation and experience, that as a general rule, Saline Cathartics do better in this disease than any others, and this coincides with the opinion of many others, who have had more experience than myself.

Diaphoretics

This remedy may be employed with considerable

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* ℞. Sulphas magnesia
" Mag: alba Usta ℥ℳ ℥iij – M. Divide in iij Powders – One of these to be taken every two hours, untill they operate freely – Dew: Practice.

advantage in the early periods of the disease, more especially the antimonial diaphoretics. Tar: Emet: given in doses as large as the stomach can bear, without producing vomiting, is highly recommended by some writers, and I am inclined to believe that it is very useful and proper, during the active stage of the complaint. After decisive bloodletting, and there remains much irritation, the following mixture, commonly known by the name of Dovers powder, forms an excellent diaphoretic.*

Emetics.

Emetics have been recommended in this disease, but it does not appear that they are capable of producing any material advantages, and should not be given, unless there are especial indications present for their employment.

Opium.

In debilitated and irritable subjects, and after proper depletory measures, in the sanguine and

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* ℞ Pulv. Ipec: Compos. gr. xx iv. .. Sal: Nitr: Hydrar .. iij. .. Pulv. Nit: Potas: .. ℥j. Mix. — Divide in 8 equal parts. S. Take one every two hours —

phlogistic, opium is often highly serviceable to allay the excessive pain and general irritation, which usually attend this affection. But we think that even in cases of this kind, this narcotic may be more properly given in the form of Dovers powder. I would not forget however to observe, that opium is decidedly objectionable so long as the general and local inflammatory symptoms remain considerable; but in the decline of the disease its effects are almost always highly soothing and beneficial.

Local Applications.

An almost infinite variety of local remedies have been employed in this affection, besides the leeches already mentioned, such as; fomentation with flannel, wrung out of hot Vinegar and water; the application of a strong sol: of Muriate of amonia, in equal part of Vinegar and water; and after the pain, heat, and swelling begin to abate, moderately stimulating lotions, such as camphorated mixture, with an equal portion of Bay: or Whiskey &c. may be accounted the most useful. Blisters. Some writers strongly recommend the early application of blisters

to the groins and different parts of the extremity, whilst other writers, amongst these Dr. Devees, condemn this practice as rarely beneficial and often decidedly injurious. When the pain in the extremity is often very great, much relief may sometimes be obtained by bathing the limb in Laudanum, and that especially after proper evacuations have been procured.

Emolient Poultices, have been recommended, for the purpose of allaying pain, as well as assisting in the dispersion of the swelling, but in the early periods of the disease, this application may do much mischief. After the fever, heat and pain, have in a great degree subsided, Emolient applications in the form of a poultice, may contribute in some degree to the removal of the stiffness and tension of the affected limb, but this purpose is better answered by fricting with dry flannel; the application of a muslin roller, previously saturated with a strong sol: of soda and dried, to the whole limb; and fumigations of the extremity, with the fumes of burning cosin &c — &c —

Diet &c.

During the febrile stage of the disease, the diet should be of the simplest and weakest kind. During convalescence the aliment should be digestible and nourishing, and when the patient is left in a very debilitated state, gentle TONICS should be given her.

Exercise.

When ever the weather is favourable, and the patient has sufficiently recovered; exercise by gestation, will contribute greatly to a speedy and effectual state of the general health &c.

With this then, I finish my Inaugural Dissertation; but before I close it entirely, I beg you, Illustrious Professors, who have so eminently distinguished yourselves in teaching the science of medicine, in its different extensive branches, and from whom I am now about to receive the highest honours of the profession, will accept my most cordial wishes for your happiness; and be assured for the many instances of friendship you have

on many occasions shown me, as well in a private as public Capacity, I shall ever retain a heartfelt remembrance.

Dum juga montis aper, fluvios dum piscis amabit,
Dum q: thymo, pascentur apes, dum rora cicada,
Semper honores, nomenq: tua, laudesq: manebunt.

Virgil -

Finis

An Inaugural Dissertation on Variola

submitted to the Provost, Trustees and Faculty of Physic of the

University of Maryland,

for the degree of

Doctor of Medicine:

by

Leonard Cassell, McPhail

of

Baltimore,

Md.

1832.

"Diligentia vincit omnia."

Dedication.

To the Faculty of Medicine
of the
University of Maryland.

To
Evan Poultney Esq.
My Friend and Patron:
this tribute of respect is justly due:
and
is awarded by one, who will ever
remember with gratitude his many
services.

Introduction.

"Since brevity is the soul of wit,
And tediousness the limbs and outward flourishes, —
I will be brief."

Shakspeare.

To an intelligent Faculty — I beg leave to submit for their consid=eration this thesis, and request for it a candid examination.

The Author

History of Variola

Medical History gives us but an imperfect account of the origin and perpetuation of variolous complaints. The ancient Greek and Roman writers do not mention the existence in their day of the disease now known as Small pox. The disease however was known early to the Hebrews and Arabians - and the first mention of it is by Rhazes an arabian author who wrote in the tenth century of the christian aera* An author in our day attempts to identify it with the Leprosy mentioned by Moses in the book Leviticus chap. XIII(P) There are various opinions concerning the antiquity of Variola, all of which have arisen from the belief, that the disease had one origin and has been perpetuated - a belief founded in error and continued by a prejudice in favor of authority. I hope to prove in this division of the subject that variola has had many origins - has often been extinguished, and as often been revived.

All is speculation concerning the antiquity of small pox: It has originated, in modern times, in places insulated from all connexion with infected countries. It were idle to review those Authors who have written on the History of Variola - their works are known to the world at large

* Rees' Cyclopedia
1 P/ James Smyth M.D. of Baltimore

To suppose that certain diseases, particularly those of the class Exanthemata, have had but one origin is to refer to Adam as the source of all physical evil, as he is said to have been the cause of our moral condition. The Mythologist when he states diseases to have been let loose from the box of Pandora, gives us something more near the truth - though veiled in fiction. In the History of Variola, like in the history of the world, we can refer to a certain point beyond which all is darkness and uncertainty - doubt hangs upon the rest.

I am not opposed to the opinion that contagious diseases are perpetuated: only that of their having had one origin. The contagion of small pox must first have arisen from the operation of certain causes, which causes then ceased to operate as the disease became capable of continuing itself. - What these causes were, we are unable to ascertain; but to suppose we never shall know, is to fold our arms in idleness, or labour only to close up the avenues to knowledge. The laws governing the contagion of variola will ultimately be known - they may long remain hidden, yet the medical world shall one day or other, be as conversant with them, as the philosophical are with those regulating the movements of the planetary system. I have no belief in the opinion that the Deity visits mankind with contagion and pestilence, nor that the Prince of Darkness comes upon us with the besom of destruction - Such superstitions have in every age been the bane

to medical improvement. To refer to the Deity or to the Prince of Darkness as the cause of disease is ridiculous - our remedies should be prayers and supplications if they are the cause; and the materia-medica should be revolutionised - peace offerings should take the place of calomel, and tartarized antimony be superseded by sacrifices.

I will here state a circumstance, to prove, that variola can arise without a previous exposure to contagion. - A vessel left the port of Baltimore destined for the East Indies - She set sail in the early part of March 1821 or 22 I do not now recollect which: She was a new vessel and had never before performed a voyage; had a picked crew, and all newly clothed. At the time she sailed, no small pox was known to exist in Baltimore, nor had there been any known to exist for months before. She made the Capes without speaking a single vessel. When about sixty two days on her voyage two of her crew sickened and in six days the small pox made its appearance upon them in the most confluent form; one died on the twelfth day from the appearance of the fever - in the other it ran its course and he was on deck in the fourth week from his attack. The Captain being an intelligent man, immediately on the appearance of the disease, set about devising a plan for the preservation of his crew. He found that the men who were sickened had never been vaccinated; and that two others of the crew did not possess the mark - Knowing they would take

it

on exposure, they were order'd to work in a part of the ship the most remote from the births of the sick-men — On further reflection he thought that they would be during the whole voyage liable to the complaint, he persuaded them to submit to innoculation. They were prepared for it in two days by purges of salts and by washing the body clean with warm water and soap. Matter was taken from a pustule on the arm of the surviving sufferer on the 14th day from the appearance of the eruption, and inserted into their arms. In one a single pustule alone resulted from the innoculation, and that where the matter was inserted: in the other more than a hundred vesicles appeard about half of which filled with a pus of a much lighter color than that from which they were innoculated — In both the disease ran its course in less than two weeks — Their fevers were violent and one of them was delirious for two days. * They did not occupy the same part of the ship during their sickness as was occupied by the other persons in whom the disease originated. The bedding and clothing of all the persons affected were thrown in to the sea, and the ship fumigated with vinegar. The disease disappeared entirely with the innoculated persons — It may be well to mention that several of the crew complained of nausea before and after the disease made its appearance. The vessel during her voyage touched at

* the one on whom there was but one pustule

several places; and although visited by persons unprotected by vaccination or innoculation, no one was ever known to have taken the disease from the ship. She returned to Baltimore at the end of her voyage, with all her original crew except the one that had died with small pox.

I have adduced the foregoing account of the disease on board the Indiaman, to uphold the opinion, that the disease may arise spontaneously - without previous exposure to contagion - Here the same causes that first produced the disease must have operated: How else can we account for its appearance? - The ship was new; the clothing of the crew never before worn; the ship having no communication with other vessels from the time she left port untill long after the appearance of the disease; the port she left being free from it; and the length of time, more than sixty days. The disease could not have been communicated through the media of fomites - for if there were any infected articles on board, the disease would have appeared in less than two weeks: How then did it occur? - It occur'd from the operation of the same cause, or causes, as produced it in the ~~first~~ instance.

Variola has often been extinguished, and as often, been returned: If this position be not true, how are we to account for the disappearance of the disease in certain countries, and its reappearance after a great length of time, when it is found not to have been imported - it breaking out in the very heart

of the country among the natives? We can account for it upon no other rational principle than the one advanced – the disease has been extinguished and by the operation of the first causes again returned. That the disease has disappeared and remained away from certain countries for scores of years we can produce abundant testimony to prove; and that it has again appeared without having been imported is, equally veritable.

What proofs have Authors given us of the single origin of Variola? – Such only as are very uncertain – drawn from records as barbarous as the ages in which they were written. Many dwell upon the single authority of an ancient writer * – whilst others trace its origin in Jewish history to the days of the Egyptian captivity. That the disease has had an ~~origin in~~ origin in Egypt I will not deny; but that it has spread from thence over the World I am not prepared to believe: being confident that the same causes which produced it there may produce, and have produced it in all quarters of the Earth.

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* Rhazes

The Disease.

In speaking of Variola as an affection, it will be proper, perhaps, to notice the particular tissues implicated in the disorder, as well as some of the laws which seem to regulate its progress, and others, that operate to modify its appearances.

It is now generally admitted on the part of enlightened Physiologists that certain diseases have an attraction for, or primarily attack, a particular tissue, and then radiate or spread to other parts; and that certain medicines are determinated or thrown to certain parts remote from the point or spot upon which they first impinge:- These admissions being correct - the practice of Medicine, hitherto an uncertain one, promises to be one of great certainty and usefullness. The mucous membranes and such as approach to them in character and office, are principally affected in variolous diseases: why they should be so, we are unable to say - the present state of our knowledge will not admit of an explanation; but of the fact we want no further convincing proof than that afforded by the operation of our senses. To destroy animal life, the nervous energy must first be extinguished - and, hence, small pox destroys by wearing out the nervous system by overexcitement or undue stimulation. But to pursue the subject of nervous irritability, excitement or

stimulation, would be to launch my bark into the ocean of opinion, where I would be swallowed up by the Charybdis of authority or the Scylla of dogmatism - or avoiding these, might be wrecked upon the quicksands of Ignorance - I must therefore resume.

Anatomists, particularly the French, have divided the organism of animal bodies into several elementary tissues: Many of these divisions, it must be confessed, are too minute; yet we find much to admire and but little to condemn in the system of Bichat. The skin is considered by him, I believe, as a membrane approaching in character those of a mucous kind: but our countryman Godman considers it, and I think truly, a compound membrane formed by the laminated union of serous and mucous tissues. The membranes, lining tubes of the animal system, which communicate with the air, are of a mucous character: whilst in their continuance over the surface of the body, they become of a seco-mucous structure. It is the skin and the lining membranes of those tubes, which communicate with the atmospheric air, in which variola manifests itself. On examining a pit * which has been formed by small pox, we find these features present - distinct papillae surrounded at their base by an excavated line - with an intervening ridge between each papilla - the number of papillae varying according to the size of the pit or fova - It is these papillae that secrete or pour out the virus of variola mixed with serum and mucus: and the

* On the superficial skin.

excavated-line is owing to the destruction of the cellular tissue which connects the cutis-vera with the cuticle. When the disease arises from exposure to contagion (I here use the term in the manner I understand it to mean)* the poison of variola is recieved into the lungs along with the atmospheric air, and by this means enters the arterial circulation. – I say, "enters the arterial circulation," because I have no belief in the doctrine that the poison of any contagious disease acts primarily upon the nerves of the pulmones: Indeed, a knowledge of the structure of those nerves distributed to the lungs – their particular office – would forbid the rational consideration of such an hypothesis. When the disease is induced by innoculation, it finds its way into the general system through the absorbents: and I may here, with propriety, give the reason why the disease is more mild when taken by innoculation than when taken in the natural way; and it affords me pleasure whenever I can testify to the alleviation of human suffering by the means of art. When variola is taken in the natural way the amount of poison is greater, and before reaching those membranes upon which the virus is rendered fit for propagation must pass through parts intimately connected with organic-life – and from this last circumstance we have arterial excitement – the nerves are thus unduly stimulated, and now fever is radiated from the cerebro-spinal axis. When taken by innoculation the disease is render'd milder on account of the virus being small in quantity and

* Not literal

in a state not requiring such strong excertions on the part of the animal-system to resist its effects: an explanation may be also found in the difference of sensibility in the tissues primarily affected in the one and secondarily in the other.

The skin and the mucous lining of the mouth, throat air passages, intestines, and the eye-lids with their conjunctivial reflexion are the parts upon which variola manifest itself in a pustular form- though not always upon the latter two. The lining of the eyelids are not often the seat of pustules- but there is in all confluent cases an increased secretion of mucus from their surface, and mostly of a purulent character. Complete Dysenteria is very commonly present in bad cases of small pox.

The formation of a vesicle takes place after this manner - The transpiratory pore of the cuticle is closed by inflamation- the papillae secretes or secernes a sero-mucous fluid which occupies the reticular tissue and pushes the cuticle along before it as it accumulates. In variolous vesicles there is a depression in the centre- this is the spot of the closed transpiratory pore- which in health by the aid of a powerfull microscope is shown to be surrounded by a distinct sphyncter muscle. The change of colour and consistence of the secreted fluid is owing to the action of the solar light and atmospheric air upon the constituent parts. *

* It was stated in a letter read before the "Medical Society of Baltimore" at a meeting in February 1832 that pustules will not produce pittings if excluded from the light: if true this is a valuable discovery.

I have noticed the tissues implicated in the disease and have explained the manner of the formation of a vesicle - I will now proceed to the consideration of some of those laws which seem to regulate the appearance of the disease and its progress. I will speak from an understanding of the subject - having seen small pox in all its forms from a confluent pustulation down to a scarlet eruption - terminating in the destruction of the cuticle.

Nosology:

I am well aware of the opinions entertained by some of the Professors of the University of Maryland on the subject of nosological arangements, yet I trust to their good judgments to determine whether I have not a right to canvass their opinions with the same freedom that they have canvass'd those of their cotemporaries.

The learned and justly distinguished professor of the "theory and practice" in the University of Maryland deprecates the adoption of nosological arangements - believing that they lead to inert practice: yet he is of opinion that some contain useful knowledge and may be consulted as medical histories. As to the opinion that the adoption of such arangements would lead to inert systems of practice - it may be true in regard to some individuals, but I cannot bring my mind to the belief that it would be universal. Nosologists have only brought together the symptoms of diseases, and aranged

them according to their relations, so as to facilitate the labours of the medical enquirer, as also to present at one view the different phenomena attendant on the progress of any disease: they have also laid down, so far as they have been able, the causes - not altogether unimportant in the construction of systems of Nosology. Nothwithstanding all the opposition to systems of arrangements, the most powerful opponents are forced to admit that they may be consulted with benefit. I do not think the objections urged by the learned and very profound Professor of the "Institutes of Medicine" are sufficient to cause us to throw aside these systems But however, my weak understanding and feeble judgement, may not be able to receive and justly appreciate the opinions on this subject upheld by the Professors of the "Theory and Practice" and "Institutes". It is but justice to these gentlemen, here to make known, how much I am to them a debtor - much of my medical knowledge being derived from the chairs which they fill with so much credit to themselves and honor to the Institution, and however widely we may differ on this point I esteem it honorable to agree with them in most others.

Among the systems of Nosology the most prominent are two - the Nosologies of Cullen and Sauvages both of which possess much merit, yet some of the objections

urged by the enemies of systematic Nosology, may with propriety apply to both. They were perhaps the best that could be afforded in the times they were written, the (then) present state of science admitted of none superior. But the discoveries of Bichat Beclard Broussais Meckel Spurzheim and Bell have almost revolutionized every system of medicine; and it cannot be expected that any system of nosology will now be recieved unless it be based on the sure foundation of physiological science.

That diseases may be known by their symptoms and that those symptoms may lead to a development of their causes, I am as well assured as that a plant by certain natural appearances can be referred to its place in the system of Linnaeus or Jussieu. The scriptural phrase the "Tree is known by its fruit," is as applicable in a medical as in a moral sense. If by a long course of observation we find that certain symptoms of disease follow a certain train of causes and end in certain affections, how can we rationally withhold our belief in a system of nosology founded upon the causes symptoms and effects of diseases.

The disease popularly known as small pox has received different names from different authors. I shall ~~state some of them, but in~~ adopt the most correct

that of Cullen, Linnaeus, Sauvages, Sagar, and Davidge.

— Variola, according to Dr. Cullen is of the general order Exanthemata, which is his third in the class Pyrexia. It is his Genus XXV, and has two species —

Variola discreta; — Distinct small-pox;

Variola confluens. — Confluent small pox.

The same species are adopted by Davidge; and the disease is mostly written upon in that order.

Variola is according to Cullen — "A contagious synocha, with vomiting, and pain when the epigastrium is pressed. On the third day an eruption of inflammatory pustules begins, and is completed on the fifth day, which suppurate on the eighth and finally terminate in incrustations, often leaving deep scars or pits in the skin."

Variola discreta — "with few pustules, that* are distinct, circular and full; the fever ceasing immediately after the eruption."

Variola confluens — "both numerous pustules that are confluent, irregular in form, flaccid and depressed; the fever continuing after the eruption."

It is not necessary that I should enter further into the description of symptoms the foregoing by Cullen are true to the life, and are present in every instance where there is pustular eruption: therefore, I will proceed to the consideration of the —

* (which)

Contagion.

The contagion of variola is regulated by laws peculiar to itself. A great diversity of opinion exists as to the time the disease is capable of being propagated — Some state it may be taken during the time of the initial fever: others that it can be taken in all stages of the complaint. Now from a carefull observation of several cases I am enabled to say that the disease is only propagative at and after the suppurative stage. In this stage, from ten to fifteen days after exposure the person is seized with a chill - the energies become depress'd and fever with the usual train of symptoms come on. The eruption appears in three days - vesiculation takes place on the fifth day and the other stages follow in regular succession.

The fever attending the initial stage of Variola is Synocha: It often in confluent cases changes to Synochus - which again gives place to true irritative fever, as the suppurative stage advances.

Diagnosis.

During the eruptive stage of Variola it is liable to be confounded with other diseases - more particularly with Rubeola and scarlatina. It is readily distinguished from the former by the absence of Coryza and cough - the eruption is also different in measles it begins

in patches of a crescentic form whilst in variola it is in single points of a vermillion red at first - in measles it is of a dusky red approaching a chocolate hue. It may be distinguished from scarlatina - the eruption being in patches in the one and in distinct points in the other - also by the absence of sore throat which is not often present in the initial stage of Variola and which is always present in Scarlatina. But this disease is most liable to be confounded with Varicella during the stage of vesiculation. From it, it may be distinguished by the regularity of vesiculation and the inflamation surrounding each pustule - In Varicella the vesiculation is irregular; some drying up whilst others are just appearing - a thing never seen in Variola - whilst no inflamation surrounds the pustules.

Note.

Varioloid.

This is nothing but small pox: It is not as represented a bastard contagion - vaccina and variola mixed - It is not an hybrid: for if it were it could not propagate for that would be against a well known law of nature.

The very best proof of its true variolous nature is that if a person unprotected by vaccination or innoculation be brought within the sphere of its influence he will have induced in him confluent Variola.

Prognosis.

So long as the fever continues of an inflamatory character we have not much to fear.

In the confluent kind the fever often changes from synocha to synochus – this is a critical period and many die at about this time

A retrocession of the rash is unfavorable as is also the tardy and irregular appearance of the eruption.

Coma: at any time is an unfavorable sign but more especially in the initial stage.

The continuance of synochal fever throughout the suppurative stage of Confluent Variola is highly favorable.

Haemorhages: are at all times unfavorable: they sometimes occur in the initial stage and are then mostly from the mouth and nose. When they occur at or after the suppurative stage they are more likely to be from the bowels and from the urinary organs.

Diarhaea: is a necessary attendant on confluent Variola and is not unfavorable.

Dysentery: is unfavorable it indicates great irritation or inflamation of the mucous lining of the alimentary canal.

The vigour of the mental faculties is no sign upon which we can prognosticate favorably, as persons are known to die in the complaint whose minds have been undisturbed throughout the complaint: whilst others have recovered who were delirious from the initial fever to the decline of the disease.

A puffiness or oedematous state of the body is not an unfavorable sign for as many recover after this as others who have it not.

Initative fever is a necessary attendant on the decline of confluent variola.

On the whole the prognosis in this complaint is uncertain.

Treatment.

If we know that a person has been exposed to the contagion of small pox our course of treatment is plain. Or if we know the disease is raging, we can form a perfect diagnosis, if the symptoms enumerated by Cullen are present; as they will be, if the case is Variola, as sure as the sun has shone or the moon will appear at night.

If the patient be a plethoric person and the initial fever be violent and he be threatened with congestion he may be bled: but we must not expect by venesection to cure the disease as it is one that has a certain course to run and certain effects to produce, which we cannot prevent altogether though we are able to strip it of some few of its terrors. In this stage we should open the bowels by mild unirritating cathartics — the cooling neutral salts in moderate doses are best for this purpose — yet some esteem calomel, under the impression that it has a specific effect on the disease. Our attention should be directed more particularly to the parts about to be implicated with the eruption — the mucous-membranes, particularly the skin: medicines calculated to open the transpiratory pores should be exhibited with a view to keep up a gentle action on the surface — For this purpose saffron has long

been used in domestic practice; I would not recommend it on account of its being stimulating, yet in the latter stages of the Confluent kind it can not be too highly appreciated. The following combines with its diaphoretic effect that of being a gratefull febrifuge, and I am much mistaken if I have not seen the eruption much lessened by its use ℞. Tart: Ant: ....gr. i
Acid: citric: .... ʒ i
Mel. ..... q.s.
Aqua font. ... ℥ i
ft. haustus – A table spoon full every hour if it nauseate a smaller quantity. Sugar may be substituted for the honey as it proves offensive to some stomachs.

When the eruption appears we should carefully watch it with a view to prevent a retrocession. When the pustules are filled we may puncture them with a very pointed lancet or needle avoiding a large orifice as it would admit the air which might prove injurious: the fluid let out should be washed away with soft cloths or sponges dipped in a weak solution of Chlorine in water which will prove very gratefull by lessening the fetor and correcting any disposition to putresency. During the decline of the disease a little good wine may be allowed; but only after the pustulations have dried: If the persons constitution is yet good it would be better however not to permit wine but to depend on generous diet, fresh air and excercise.

The diet during the initial stage of the disorder should be of the blandest kind. Rice water sweeten'd with loaf sugar, or barley water: If the patient requires something stronger he may be allowed weak broths — the manner of making one I will here state — If remarkable for nothing else it will at least be for the easy manner in which it may be made and the cheapness of the materials — Take the skeleton of a* fowl (such are most always to be found in the pantry) crush the bones and pour over them one quart boiling water, set the stew pan or porringer or whatever vessel is at hand fit for the purpose on the coals or in a stove and let it boil slowly down, according to the strength you want it, ~~add~~ from time to time crumbs of bread or what is better rice-flour a small quantity stirring the whole often, then strain through a sieve or gauze or piece of rag, according to circumstances and season it with a little salt. The patient may take a half pint of this in the course of six or eight hours. If no skeletons of fowls are at hand two or three ounces of any cooked beef veal or mutton may be substituted.

Drinks — Cold water is admissable in the initial stage and is often desired: lemonade and Orangeade

* a chicken — if a goose or Turkey add water in proportion

are the best drinks if the bowels are unaffected with Diarhaea or dysenteria - which is not often the case in a distinct form of the disease though mostly always at=tendant on the confluent form.

Ripe acid fruits may be allowed in the different stages of the disease preceeding maturation; but in this stage they should be omitted as they may affect the bowels.

The bowels of the patient should be particularly attended to: a tea-spoon full or two of Henry's mag=nesia* may be exhibited every two or three days, so as to carry off the accumulated secretions which are often abundant and which if suffered to re=main will bring on irritative fever.

* The following process for obtaining this valuable preperation was made known to me by a private pupil of the celebrated Accum.

Take the desired quantity of sulphate of Magnesia, dissolve it in water, then add a solution of Carbonate of pottassa untill no further precipitate follows - decant off the super=natent liquor which will be sulphate of pottasa - gather the precipitate which will be carbonate of Magnesia by evaporation - wash it several times to disengage any remaining particles of the sulphate of potasa and dry it in the sun - then put it into a crucible on which is to be luted another having a hole in the top - place it in a furnace - urge the fire to white heat for one hour

I have detailed the treatment of a common case of varida: yet in the most confluent form much more is to be done. In the initial stage of both varieties of this disorder the treatment is the same: The confluent variety however is mostly attended with typhoid fever commencing with the suppura=tive-stage. So soon as the pulse is discovered flagging or the fever is found on the change from inflamato ry to synochus we must commence with stimulants and keep the system mildly under their influence until the disease will have assumed a favorable character. For this purpose the infusion of sassafras is esteemed good as is also that of the Rad. serpentaria vir=giniana, with occasional doses of pulv. doveii. It is some=times necessary to combine an anodyne with a stimu lant - for this purpose a decoction of poppy heads is recommended - the black drop - laudanum, Morphia & lactucarium may all be usefull. The tone of the system is to be sustain'd by bark quinine salicine and their combinations. *

If Diarhea or Dysentery be present we must treat them with great care always recollecting that

- then break the crucible and pass the magnesia through a fine sieve - bottle from the air and it is fit for use.

* Tonic stimulant -

℞. Sulphas Quinae ..... gr X
Liquor anodyn. Hoffmani ... ʒ ii
Teaspoonfull every three hours

they are the effects of the disease, and are produced by the accumulated secretions. Dovers powder with occasional small doses of magnesia will prove often efficacious. In the dysentery emollient injections may be used with advantage. *

In all cases great regard should be paid to cleanliness and ventilation. Fresh cool air is very essential - every window should be up in summer; and in winter the temperature should range between 50 and 60° Ft. Shallow dishes containing the chloride of Soda or lime should be placed in different parts of the room to neutralize the effluvia arising from the patient.

It may be necessary to exclude the light to ensure the preservation of vision, and all friends so as to keep the patient in a state of quietude

Some French authorities speak highly of the use of Nitras argenti applied in solution with a camel's hair pencil to the pustules I know nothing of its utility having never seen it used.

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* Sometimes the face and other parts become so turnid as to make them appear more than twice their ordinary size.

Prophylaxis.

A monument should be reared in every country to the illustrious Jenner commemorative of his discovery of Vaccination: His name deserves to be enrolled among the brightest which adorn the page of History as a "Benefactor of mankind", and to float along the stream of time to the latest posterity.

Vaccination without doubt is the surest prophylactic we possess: if genuine and the body in a state of health at the time of the operation, and it go on to maturity without interruption – the person is forever after secure from small pox. I am aware that there are many opinions adverse to the one advanced, and entertain'd too by men of high medical reputation; some suppose the vaccina extends its influence no farther than seven years – others to ten – Some pretend to judge of the genuineness of vaccination by the appearance of the scar. The fact is vaccination if perfect is a safe-guard from earliest infancy to the most remote period of human existence; and as to those who judge by the scar

"They have eyes so wond'rous keen –
They see things not to be seen".

I shall not in this division of my subject enter into an analysis of the History of vaccination as originally intended; nor state the progress of a vaccine vesicle

as it is now so generally known. I will here detail some facts that may be of importance. Rebecca the wife of John Dunn, Sailor Baltimore informed me that she had the true vaccina on her hand taken from her father's cow in the year 1789. and speaks confidently that the small pox was in the neighbourhood at the time: she resisted innoculation and never had the small pox. It was a knowledge of this circumstance that led me to investigate the nature of the cowpox. Failing to find any trace of disease among several hundred milch kine examined I began to look out for grease in the horse I was shown sores by several Farriers that they denominated grease - the matter of which would never produce pustulation. Now there was always some difficulty with me in relation to this matter: Jenner's first reference to the cow and then to the horse and from the horse back to the cow produced an odd impression; and no persons being able after him to produce pustulation from grease unless small pox was in the neighbourhood led me to believe that the sore in the horse's foot imbibed variolous effluvia and altered its virulent character to a mild disease. Struck with the impression some years ago, I determined on putting it to the test of practical experiment whenever an opportunity offer'd, which did in the year 1826.

I procured matter from a person in the suppurative state of confluent variola and repair'd to the Fort road where cows are known to herd together between the distillery and Fort McHenry - here I inserted the matter into the teats of some and on the udder of others to the number of more than twenty. I repaired from day to day to the place for the purpose of watching the progress of vesiculation Some of the cows were missed but in three the disease was closely watched. In them the point at which the matter was inserted inflamed on the third day vesiculated on the fifth was filled on the eighth and on the fifteenth encrusted with a brown scab - some of the cows had a crop of pustules. Matter for innoculation was taken on glass in the tenth day of the pock and some of the scabs were preserved for the same purpose. The difficulty was now for to procure a subject for trial - none knowing the character of the experiment would permit it: at length a black child in the neighbourhood who had never been vaccinated became known to me upon him I pitched the matter was clandestinely inserted into his arm - in three days it took - vesiculated and run, attended with the same phenomena, the usual course of vaccination. With this I was satisfied of the fact that the cowpox is nothing but modified small

pox

In 1830 I attempted to vaccinate some children with vaccine points procured from Dr. Bond their not taking gave me some uneasiness, when recollecting that I had put away four years before the scabs and glass smear'd with matter, procured from the cows I determined on making a trial of their efficacy. With a scab I vaccinated two children of James Burley, City commissioner, both of whom took and their arms presented the most perfect pock I had ever seen.

It may be urged against my experiments that the disease I induce is not vaccina - all that I can say is - It runs the same course, observes the same laws exactly that does vaccina - and I defy the most discriminative pathologist to discover a shade of difference. Whether it is as prophylactic time can only prove: I believe it is more so; because I consider it the true vaccina free from any of the human impurities with which the present matter in use is fill'd.

Will it be of any practical importance? I think it will. There are but too well grounded fears that syphilis and other disorders have been induced through the medium of indiscriminate vaccination - this will at least be prevented by using matter from the cow and rejecting human scabs. But the most important

consideration is the facility it affords for preventing the spread of Variola. There will be no necessity for keeping up expensive agencies for the preservation of matter: So soon as small pox appears and there are persons to be vaccinated all to be done is to procure a milch cow — insert variolous matter into her udder and in a few days you have matter for vaccination.

By what means the animal oeconomy of the cow so modifies variolous matter as to render it a prophylaxis against the contagion of small pox we have yet to learn — Whether milk mixed with variolous matter will render it harmless I am unable as yet to say. Neither do I know whether chlorine will alter its character.

Innoculation: In the prize essay of Dr. Caldwell, voted by the "Medical and surgical Faculty of Maryland" at their last annual meeting (1851) there are some passages which betray a strong desire on the part of the author to revive innoculation and abandon vaccination. Whatever may be the faults of vaccination one thing is certain the evils of innoculation are more to be dreaded. Vaccination in its most imperfect form will shield us from death by small pox. Let us but

introduce innoculation and the beauty of our women will pay the forfeit of our temerity — wings will be given to the pestilence — our commercial marts will become waste places and our houses the habitation of death.

Chlorine: Professor Ducatel in his introductory to a course on Chemistry (1831) made known that a French surgeon had used chlorine in the wards of a small =pox hospital with considerable success, both as a disinfecting agent and as an adjuvant in the treatment of the disease itself. In some experiments made by this surgeon he found the number of pustules lessen'd in those who were treated with chlorated drinks and washes; whilst those who were not under the influence of chlorine had the disease in its ut=most violence. He also found that it had the power to alter the character of the disease when formed; and when minced with variolous matter to destroy its power of infection.

Of the disinfecting properties of chlorine all must by this time be acquainted; but of its use in medicine little, comparitively, is known. I confidently spoke of its utility some years since to some friends: in the disease under consideration, as well as in Syphilis and Scrophula — I have not yet matured my ideas: so soon as I shall they will be given to the world.

Whether Chlorine is destined to take the place of the more simple and available prophylaxis of vaccination time will determine. Whatever may be the result the name of the discoverer of Vaccination will be cherished for the good he has already done – the blessings he has already conferred on the Human family should immortalize him!

I will dismiss the subject of Prophylaxis with a hope that ere long the medical world will be in the possession of facts which will enable the members of its community to snatch from the grasp of the grim monster Death thousands who would have otherwise untimely passed to the darkness of oblivion. I indulge a hope also that the time will speedily come when this disease shall be of rare occurrence; and the lamentations for the dead shall be but few and far between.

Conclusion.

I have exhausted my subject, and now, how shall I express myself to those, who have watched over and di=rected my studies — whose earnest solicitations have been for my welfare? — to the Professors of the University of Maryland I tender the homage of a grateful heart — 'tis all I have to give: for their learning I en=tertain the highest respects and shall ever remember with gratitude the parental care with which they imparted their instructions.

"My task is done — my song hath ceased — my theme
Has died into an echo: it is fit
The spell should break of this protracted dream."

Dissertatio Medicae Inauguralis
De Hepatitide
ad Gradum Doctoris Medicinae
in
Universitate Marylandiana
consequendum
conscripta ejusque Universitatis
Proposito, Syndicis, et Facultati
Medicae humillime dedicata
a
Roberto C. Hall

Anno Domini 1832

Nathanieli Potter M. D. Artis Medicae
Praeceos in Universitate Maryluandiana
Professori tractatum hunnce, in
reverentiae indicium humillime
dat dicat dedicat

Auctor

Dissertatio Medica Inauguralis
de
Hepatitide

Medici, ut plurimum, sensere quod Hepatitis est propria regionum tepidarum, et quidem, quamvis, etiam sub mite coelo non ita sit insolita, procul dubio, inter circulos Tropicos, sub sole ardente, saepius grassari solet.

Symptomata. Hic morbus, sub specie occulta, subito saepe, et id maximâ cum violentiâ, invadit, iis in regionibus praecipue, ubi fit ὀπισθόνος, id quod plerumque fieri solet in oriâ venosâ Coromandeli vel Choromandeli, et in regionibus paludosis prope Gangem flumen. Cum hic morbus ita subito et violenter erumpit, aeger, incipit laborare dolore Hypochondrii dexteri, et sensu quasi tensionis trans abdomen, respirat non sine difficultate, nec potest manere diu in positura accumbentis, sed maxime leniter dolor, si quando sedeat corpore antrorsum inclinato, et haec omnia grassantur sine ullo fere praecedente symptomate morbi. Sub hacc specie, ut supra dictum est, Hepatitis saepius videri solet in regionibus solis ardentis. Sub coelo mitiore, lentius plerumque et minus

lenter hic morbus aggreditur; Ibi, prima
mptomata sunt sensus tensionis in Hypochondrio
extero et in regione Epigastricâ, cum levi et incip=
nte febre, et eâ diu manente antequam morbus
ese vere dignosci possit. Dolor qui comitatur acutam
nflammationem Hepatis, saepissime se extendit
e partes ab Hepate longius dissitas, et maxime
pectus, in claviculam et humerum lateris
exteri, et nonnunquam etiam sinistri. Quum
ars interior Hepatis afficitur inflammatione,
t dixit Annesly, dolor fere gravis est et mordax,
ntra vero, quum superficies aut ligamenta
fficiuntur, dolor fit acutus, tensivus et
rungens. Dolores sympathetici vel graviores
eligeando sunt, quam qui sentiuntur in
Hepate ipso. Pressura super Hypochondrium
exterum, ejus partis dolorem magnopere semper
uget, id quod omni fere tempore fieri solet,
aeger super Latus sinistrum recumbere conatur;
tlamen est ubi aeger minime dolore afficitur
n hac positione. Tussis sicca et molesta, et resp=
atio plus minus difficilis hunc morbum plerum=
ue comitantur. Haec symptomata praesertim si
it eodem tempore magnus dolor pectoris, efficiunt
t Hepatitis haud facile dignoscatur ex Pneumon
. Aeger qui sub acutâ Hepatitide laborat, saepissime
fficitur nauseâ et vomitione puris Biliosi, et fere quidem

uo magis haec symptomata ingravescunt, eo
minus aeger afficitur tussi et respiratione
difficili. Molestissime saepe sentitur solicitudo apud
hypogastrium et praecordiam, quam solicitudinem
comitantur frequentes gemitus, et id maxime, si
quando pressus fit simul super Hypochondrium
dexterum, et sub scapulam dexteram. Color plus
minus curiginosus albi oculorum, ut et cutis faciei,
pectoris et cervicis plerumque comitatur Hepatitida;
bilis quoque quâ atte imbuitur urina, efficit
colorem ejus fuscum et subflavum. Hoc morbo
laborant siti fere ardent, dum simul cutis
est calidus et siccus. Pulsus, ut plurimum,
plenus est et firmus, nonunquam autem
tenuis tensus et celer; id quod fieri dicitur
cum superficies concava Hepatis aut solum,
aut praecipue afficitur inflammatione, quâm
inflammationem igitur participat superficies
peritonealis stomachi vel colonis. Lingua obteg=
itur albâ vel subflavâ pellicula, et gustus saepe
est amarus, aliquando autem lingua plana
est et laevis, fissuris tamen insusta et lobulis coop=
erta. In hoc morbo fere consistit venter, haud raro
autem, in regionibus calidis. Diarrhoea comitatur mor=
bum, vel ab initio. Hepatitis, sub hac specie, eodem
modo incipit quo Dysenteria. Tormenis violenter labora
eger, et haec cito subsequitur, dejectio puris aequosi

el viscidi ex alvo, et eam dejectionem comitatur
olor apud fundum stomachi, vel lateris dextri.
i pressus fit super Hypochondrium dexterum, aeger
lactu retrocedit, quanquam dolor raro quidem est
hemens. Vis doloris in alvo inquit Dr. Johnson,
it plerumque indicium rapiditatis, et periculi quo
minatur Hepatitis. Sensus quasi aestus ex aqua ferventi,
n urinâ reddendâ, fere semper sentitur, et pertur=
atio cerebri saepe subsequitur morbum Hepatis,
ende oritur quidam gradus dementiae.
Diagnosis. Dolor claviculae et humeri dextri
ere habitus est, utpote nota qua facillime dignosci
olsit Hepatitis. Hoc symptoma tamen multo rarius
st quam quidam putant, adeo ut sint qui dubit=
t an sit vere indicium Hepatitidis, et arbitrentur
od saepius oritur ex morbo quodam pulmonis aut
leurae. Dolor inquit Annesly, qui nonunquam
fficit superiorem partem humeri dextri, et quem
onulli falso opinantur esse praecipuam notam
epatitidis est, procul dubio, si quando sentitur,
ota hujus morbi in lobo dextro hepatis, sed infeliciter
venire solet quod hoc symptoma non nisi raro
entitur, et medicus inexpertus qui petit hunc notam
ua dignoscat morbum, judicare solet ejus absentiam
ndicare sanitatem Hepatis. Hepatitis dignosci
otest ex Pneumoniâ sequentibus symptomatis. In
leuriti Tussis et oppressio pectoris multo graviores sunt

cam in Hepatitide. In Hepatitide aeger minimo
dolore vexatur quando recumbit super latus
morbosum, in Pleuriti, qui ita recumbit maximam
dolorem sentit. In Hepatitide, pressus super Hypocho-
ndrium dexterum permultum auget dolorem;
quandoquidem pressus super spatia intercostalia
vix et ne vix quidem dolere solet. In Pleuriti autem,
quod contra est evenire solet. Si substantia pulmonis
sit inflammata, difficilis respiratio et dolor augentur
si aeger recumbit super latus sanum, eodem modo
quo evenit in Hepatitide, sed in ~~respiratio~~ Pleuriti,
respiratio afficitur maxime actione musculorum
abdominalium et diagphragmatis, quandoquidem
in Hepatitide, respiratio fere omnino actione inter=
costalium afficitur, pectore plane dilata, et collapso=
respiratione, dum musculi abdominales quiescunt.
Symptomata Pneumonica tum maxime appar=
ent, cum superficies convexa hepatis est inflammata.
Raro difficilis est diagnosis inter Hepatitida et inflam=
mationem Stomachi. Inflammatio Stomachi fere
notatur pulsu admodum contracto et infirmo,
Hepatitis autem pulsu duro validoque. In Gastriti pros=
tratio magna musculorum fere comitatur morbum
ab initio, et omne quod in stomachum ingeritur.
continuo evomitur; in Hepatitide contra, vires
non multum imminuuntur in initio et quamvis
ejectio cibi sit frequens, attamen haud tam facile

citatur ingestis quam in Gastriti. In illo morbo
ipsus super Hypochondrium dexterum, in hoc
super regionem gastricam efficit plurimum doloris.
Hepatitis dignoscitur e dolore qui oritur ex transitu
ingestionum biliarium per ductus fellis, vel ex spasmo
rum ductuum, ex eo quod in Gastriti pulsus raro mo
at ultra nonagies in quaeque momenta, neque
excitatur cutis caliditas ultra id quod salubre
est. In spasmo vel irritatione ductuum fellis
per congestiones Biliares, dolor aliquandiu inter=
dum imminuitur, in Hepatitide e contrario dolor
angit perpetuo. In gastriti, positura minime dolorosa
est ubi corpus inclinatur antrorsum super pelvim;
in Hepatitide aeger inclinat sese paululum ad
dexterum, genubus contractis ad corpus. Ubi leg=
umentum peritoneale hepatis solum inflamatur,
plus doloris semper sentitur quam cum gland=
ulae hujus organi morbo afficiuntur. Hepatitis
acuta raro permanet ultra diem sextam aut sep=
timum, quin vergat vel ad solutionem vel ad
suppurationem. Ubi suppuratio evenit, dolor fit
moderata, aeger affligitur sensu ponderis et palpitatio
is in regione Hepatis, rigoribus identidem corpori
brepentibus, sudore plus minus profuso per noc=
tem; videtur sibi quasi submergi, et sentit solici
tudinem et oppressionem apud praecordia, cutis
viscida est, et sensus quasi formicationis ingreditur

artem morbosam. Est ubi lobus dexter fit omnino
nil nisi abscessus isque permagnus. Aliquando partes
quae circum cingent abscessum Hepaticum, superficiei
interiori abdominis haerent, quod cum evenit, et cum
abscessus spectat ad exteriores partes, pus emitti potest
per punctuam vel incisionem, et ita aeger ad sanitatem
restituatur. Ubi abscessus spectat ad exteras partes,
tumor mollis et plus minus circumscripta videri
solet, dum plenitudo et dolor Hypochondrii dexteri
aliquatenus imminuuntur; ubi abscessus progreditur
subter costas falsas, projectio Hypochondrii notatur
plenitudine spatiorum intercostalium, et dolore qui
unico in loco, solum sentitur. Abscessus ut plurimum
spectant ad superficies hepatis superiores, unde oritur
sympathia tam frequens, diaphragmatis et pulmonis
ubi abscessus minus ad exteras partes spectat. Coloni,
interdum, aut parti cuidam alii canalis intestinalis
adhaeret Hepar, et abscessu in eos partes erumpente,
pus emittitur per alvi dejectionem. Pus quod in Hepate
congeritur, et arbitratur Dr. Saunders, potest aliquando
egredi per ductus biliares in alvum. Si quando hepar
diaphragmati adhaeret, pus saepe emittitur ex abscessu
rupto in cavitatem Thoracis. Post hunc casum inquit
Dr. Wilson, nemo forsan unquam ad sanitatem res-
titutus est, quod tamen plane falsum inventum est.
medicorum aliorum experientiâ. Vidi, inquit Dr. Eberle,
exemplum in quo, cum quantitas premagna aquosi puris

ubrubi emissa fuisset ex abscessu hepatis per pulmonum, aeger tamen in sanitatem pristinam penitus est restitutus. Qui Hepatilide laborant, saepe expuunt pituitam purulentam, id quod efficitur quia inflammatio interdum extendit sese ad membranam mucosam quâ tubuli bronchiales substruuntur, aut ad substantiam pulmonis sine ullo contactu inter ~~substantiam pulmonis~~ abscessum hepatis et cavitatem thoracis. Est ubi pus ex abscessu hepatis erumpit in cavitatem abdominalem, quod ubi fit, aeger vix ullo modo potest recusare. Sunt qui dubitent an pus genuinum possit existere in abscessu qui formatur in structura parenchymatosâ hepatis. Multo plurimi abscessus inquit, Louis, qui videntur in substantiâ ipsa hepatis non habent pus genuinum, sed liquorem minus homogeneum, in quo apparent parvi flocculi sanguinis quorum color est fuscus aut cinereus, aut qui similes sunt albumatis ex carne. In dissectione quadrigentorum et triginta corporum, non nisi in quinque ex omnibus invenit abscessum purulentum in substantiâ hepatis, et in nullo invenit in tegumentis abscessum habens pus genuinum. In Hepatilide, probabile est quod abscessus formari solet in membrana cellularia inter tegumenta peritonealia et structuram glandularem hepatis. Inflammatio hepatis videtur raro finiri per gangrenam, dubitatur equidem an hoc unquam fiat. Annesly, dubitat an unquam ita perveniat hic morbus ad finem, et negat unquam se cognovisse exemplum.

Morbus hicce nonnunquam pervenit ad finem per mollitionem hepatis. Annesly invenit aliquando superficiem visceris hujusce maculatam subrofusco et ferme nigro colore, dum eodem tempore structura interior erat inflammata, sanguine congesta, multum tumefacta, et magis aequo mollis. Abercrombie invenit substantiam parenchymatosam hepatis mollem fragilem et prope nigri coloris. Dr. Saunders arbitratur quod in acuta specie hujus morbi, capillaria arterii hepatici solum inflammatione afficiuntur, et in specie chronica inflammatio affecit radios extremos venae portae. Eandem opinionem declaravit Proffessor Puchelt, et Winslow sentit quod utraque species oritur ex inflammatione venae portae. Nulla extat causa valida quare capillaria venae portae non possint inflammari, et cum spectamus circulationem peculiarem sanguinis in Hepate, opinio, Dr. Saunders, verisimilis videtur.

Causae. Dr. Saunders et alii medici aiunt frequentiam Hepatitidis in regionibus quae sunt sole ardente oriri ex miasmata quodam quod est proprium harum regionum. ~~et vix dubitari~~ equidem potest quin miasmata quae ex paludibus oriuntur facillime hunc morbum proferre; probabile tamen videtur haec miasmata potius efficere ut incolae harum regionum sint obnoxii huic morbo, quam ea morbum ipsum inferre. Miasmata procul dubio maxime valent ad munera Biliaria perturbanda, et non sine causâ judicari potest, quod in iis regionibus, ubi haec miasmata valent, et ubi simul coelum est ardens, et his de

causis, hepar ut plurimum morbide excitatur aut ejus munera disturbantur, omnis causa quae evenit, quales sunt subita influentia frigidi et humidi aetheris per noctem, errores in eo quod ad cibum pertinet, et perturbatio gastricorum munerum, quae inde oritur; et usus immoderatus Liquoris distillati facillime adducat inflammationem organorum Biliarium. Verisimilis quasdem et novas opiniones de etiologiâ hujus morbi protulit Dn. Iacobus Johnson. Estat, inquit hic medicus, inter vascula extrema venae portarum in Hepate, et ea quae sunt in superficie corporis, vel ut in aliis verbis loquar inter secretionem biliarem et perspirationem, sympathia, e potentissimis quae extant in corpore humano, adeo ut omnis causa quae auget aut imminuit actionem vasorum exhalantium cutis, augeat quoque aut imminuat secretionem bilis in Hepate. Cum igitur compertum habeamus quam constanter aestus magnus aetheris immodicam perspirationem efficere soleat, non potest fieri quin facile possimus explicare quâ de causâ hepatitis sit ita frequens in regionibus ardente sole oppressus. Immodica et constans perspiratio inducit debilitatem in capillaria cutis, quam subsequitur debilitas similis vasiculorum secretionis hepatis. Ut vasicula perspiratoria ob immodicam et constantem actionem fiunt debilia, et frigus minimum facillime sentiunt, ita cum temperatura aetheris subito mutatur, id quod saepissime fieri solet in regionibus calidis, ob rorem nocte cadentem, vasicula

extrema superficiei continuo torpescunt, et is torpor, ob sympathiam de qua supra diximus, inducit statim torporem similem vasiculorum secretionis hepatis, et ita perspiratione et secretione biliarii ~~hepatis~~ simul remoratis, et transitu sanguinis per Hepar obstructo, motus excitatur, qui cum jam extat congestio in circulo portali, afficit praecipue hepar, in quod infert inflammationem. Quod inter hepar et cutem extat sympathia potens, plane monstratur ex eo quod in Hepatitide chronicâ, vel in torpore vel schirro hepatis, cutis semper est sicca et dura, nec fieri potest in his morbis ut perspiratio generalis erumpat e toto corpore. Videtur mihi tamen influentia malariorum, in hac doctrinâ sympathetica minus aequo spectata. Magnus et constans aestus aetheris tam saepe solet extrahere miasmata ut difficillimum cognitu videatur quantum praecedentis excitationis hepaticae, et debilitatis quae unde oritur uni aut alteri causae sit tribuendum. Quod hic morbus ex magnâ parte oritur ex malariis plane videri potest ex eo quod multum abest quin morbi biliosi et hepatici sint communes in navibus quae discursant inter circulos tropicos ubi materies absunt unde miasmata extrahi possint, quamvis aestus aetheris est constans et ardens. Praeter causas de quibus supra dictum est, multae sunt aliae, speciei tamen minus late valentis, quae hunc morbum inferre possunt, quales sunt exercitatio violens et quae lassitudinem inducit, contusio Hypochondrii dexteri, metastisis podagrae et rheumatismi vulnera et injuriae cranii, vicissitudines tempestatum

totus aquae frigidae ubi perspiratio libere erumpit ex corpore, et irritatio ex bili in ductibus fellis congestâ. suppressio haemorrhoidum, ira violens, terror, et abjectio animi, quae omnia possunt excitare acutam inflammationem hepatis. Hic morbus etiam excitari potest in infantibus per dentitionem. Regimen.

In hoc morbo, ut in aliis qui ex inflammatione oriuntur abstractio sanguinis est inter summa remedia. Duae sunt causae cur venaesectio sit adhibeta in initio hujus morbi; scilicet imprimis necesse est ut imminuatur cum momentum circulationis, tum etiam congestio hepatis et vasiculorum portalium; deinde haud minus refert ut redigatur quam primum conditio phlogistica totius corporis, quo Hydrargerum adhibetum succedat ex sententiâ, quod ut prompte fiat oportet. Quum abstractio sanguinis plane effecerit corpus, tum adhibendum est cathartieum efficax. Sub. Mur. Hydr. et post duas horas dosis plena. Olei. Ricini. vel infusionis Sennae et mannae erit efficax catharticum. In hoc morbo haud raro necesse fit ut repetatur venaesectio, et id saepius intra paucos dies, antequam reactio arterialis fiat et permaneat moderata, hoc praecipue solet fieri sub mite coelo. In regionibus calidis raro opus est frequente repetitione venaesectionis in initio morbi. Una venaesectio aut etiam duo fere sufficiunt ad reactionem febrilem imminuendam. Hirudines adhibitae apud regionem epigastricam et super Hepar saepe multum valebunt ad inflammationem hepaticam

educendam, quoties autem et una aut duo venae-
sectiones efficaces in lacerto, praecedant abstraction-
em localem sanguinis. Fieri potest ut sit necesse
iterum adhibere hirudines, praesertim si, post adhi-
betas rationes supra dictas, pulsus adhuc celer est,
et symptomata localia non multum imminuta
Per omnem progressum morbi alvus est ciendus, et
necesse est ut Sub. Mur. Hydrarg. sit pars praecipua in
cathartici quae adhibeantur. octo vel duodecim
grana hujus cathartici possunt adhibere in sex qua
sque horas sub initium, et deinde, nisi post decem
aut duodecem horas. Sub. Mur. Hydrarg. efficerit purgation
es largas, adhibenda erit dosis Sulph. Sodae vel mag-
nesiae aut Olei Ricini. Quum primum reactio arteriar-
um fuerit moderata venaesectione et directa et locali,
et cum alvus fuerit vacuefactus, potissimum recurrend-
um est ad Ptyalismum modicum, Plasmata Epis-
pastica etiam sunt adhibenda super regionem hepatis,
et alvus modice purgandus est. Opium adhibitum cum
Sub. Mur. Hydrarg. permixtum, praesertim post redactam
reactionem arterialem et excitationem phlogisticam
venaesectione, jamdudum commendatum est a Doctore
R. Hamilton et post eum a multis medicis clarissi-
mis. Compertum habemus inquit Dr. Johnson. per exp-
erimenta complurea, quod opium cum antimonialib-
us permixtum mirefice auxiliatur Hydrarg. in acuta
hepatitide, quia non solum imminuit multos dolores

ribus aeger laborat, verum etiam ducit liquores
ad superficiem, et provehit diaphoresim, quae
ut in aliis morbis, ita praecipue in hoc permul-
tum valet. Tria vel quatuor grana Sub. Mur.
Hydrarg. cum semigrana opii possunt adhiberi
in quatuor quasque vel quinque horas, donec
gingivae plane affici incipiunt. Hoc praecipue
valet ubi est diarrhoea. Quidam arbitrati
sunt quod Epispasticis primo adhibetis, duo vel
tria grana pulvis antimonialis cuique dosi
Hydrargeri et opii addita, multum navabunt
operam, non solum ob naturam ejus diaph
oreticam, verum etiam quia videtur idonea
ad provehendum inductionem Sub. Mur. Hyd.
quod ut fiat celerime maxime refert. Dum
haec medicamenta adhibentur, fere necesse erit
ut adhibeatur etiam dosis Olei. Ricini. In
violenti et celeriore quaque specie hujus morbi
in regionibus calidis, difficile saepe est efficere
operationem tempestivam Sub. Mur. Hydrargeri interna
solum adhibiti. Si sit unquam causa metuenda,
hac in re, difficultatem aliquam frictio ~~inter-~~
~~nam~~ Unguentum Hydrargeri adhibenda est, praeter
administrationem internum Sub. Mur. Hydrargeri
Unum vel duo drachmata Unguent. Hydrargeri
possunt affricari brachiis vel femoribus in dies
ter aut etiam quater, si ptyalismus videtur removari

facilius, ut aut Dr Johnson. corpus absorbebit Hydrarg. atque igitur celerius afficitur actione hujus medicamenti, si aeger in singulas noctes ante cubandum, ebibat pulmentum, aut quemvis alium liquorem calidum. Adhibitio plasmatum Epispasticorum quae obtegant totum Hypochondrium dexterum et regiones epgastricas, post venaesectionem, plurimum valebit. Haec plasmata fere semper magnopere imminuunt dolorem localem, et efficiendo quod liquores vergant constanter ad superficiem, attenuant haud parum localem inflammationem Permagno fere erunt usui Sub. Mur. Hydrargeri antimoniales, et cathartica alia medicamenta, simul cum venaesectione adhibeta. Nisi stomachum sit plus aequo tenere, Pulvis Antimonalis potest administrari ad tria circiter grana cum Sub. Mur. Hydrarg. et opii vel cum Nit. Potassae aut Sulph. Potassae in tres aut quatuor granasque horas: et ad provehendam operationem Hydrargeri Thermae erunt maximo usui. Ubi inflammatio pervenit ad finem per suppurationem, id quod cognoscitur rigoribus, sensu quasi submersionis et solicitudinis apud praecordia, sudoribus per noctem, et identidem formicatione cutis, cum plenitudine et sensu ponderis circa margines costarum, et

dolore gravi palpitanti in hepate Sub. Mur. Hydrargeri non potest amplius adhiberi. Si ita opus sit facto ob symptomata localia ut et micationem pulsus et conditionem corporis, Hirudines possint applicari prope tumorem et hoc magnum plerumque afferet conditionem et postea adhibenda sunt constanter cataplasmata ad efficiendum ut abscessus vergat ad partes exteras. Alvus etiam leniter ciendus est post formationem abscessus, id quod fieri potest per quinque vel sex grana Sub. Mur. Hyd. quam dosim tamen subsequatur oportet pars quaedam Sulph. Magnesiae. Nisi abscessus spectat ad exteras partes, nihil amplius fieri potest, quam ut leniamus symptomata quae videantur et expectamus eventum. Ubi abscessus spectat externe et fluctuatio puris potest plane distinqui, necesse est ut fiat punctura quo pus possit emitti. Cavendum est tamen ne hoc inconsulte fiat, antequam pus appropinquaverit ad superficiem externam hepatis aut antequam superficies ad quam spectat abscessus haeserit superficiei oppositae parietum abdominalium. Oportet quoque ut medicus satis compertum habeat ex tumore in regione hepatica, atque ex progressu morbi ab initio, abscessum vere existere, nec tumorem oriri a congestione immodicâ bilis in vesiculâ fellis.

Ubi dolori et plenitudi universae reverâ successerit tumor, et is absque dolore acuto, mollis et fluctuans prope apicem, vel elasticus et quodam modo lividus apud superficiem punctura potest fieri cum omni spe ut succedat ad sententiam. Operatio quae appellatur paracentesis Thoracis feliciter aliquando evenit ubi pus erumpit ex abscessu in cavitatem Thoracis. Post suppurationem et pus emissum, nullum forsan remedium plus afferet commodi quem Acidum Nitricum muriaticum. Hoc medicamentum adhiberi potest et externe et interne externe quidem ut pediluvium. Partes aequales Acidi Nitrici et muriatici fere miscentur. Hujus mistura semidrachma vel etiam drachma, aquâ, quantum satis est, dilutum potest ingeri indies in stomachum, et ne dentes laedantur, mistura potest imbibi per calamum vel tubulam vitream Pedes et tibiae etiam possunt immergi in vesperos quosdam triginta vel quadraginta momenta in therma quae consistat, primo, ex unciâ vel semiunciâ misturae cum congio aquae, et postea vis thermae gradatim augeatur ita ut consistat sex vel octo drachmatis misturae cum congio aquae, Quo aegri quos memoravit Dr. Eberle, penitus restituti sunt per usum constantem hujus Thermae. Multum etiam proderunt

doses parvae Sub. Mur. Hydrargeri cum extractione cicutae ter indies adhibetae et haec mixtura debet constare ex decima parte grani Sub. Mur. Hyd. cum duobus granis cicutae. In suppuratione hepatis Amesly invenit commodum ex acidâ Nitricâ cum Tinctura opii Hyosciamo vel conii Maculati praesertim cum abscessus erupisset in pulmonem. Tali in casu, si corpus fit multum debilitatum, et sudores per noctem profusi, vel si digestio cibi deficere incipit, recurrendum est ad medica=menta quaedam amara cum Acidum Nitric=um et extractione Conii Maculati. Si quando aeger Hepatitide laborans irâ multum excitatur haud improbabile est ut arquatus fiat, cum irâ tantum afficiat hepar. In Hepatitide pulsus fere durus est sed tenuis. Venaesectioni imprimis in hoc morbo inmitendum est. Ubi causa Hepatitidis est calculi, et suppuratio fit aeger vexatur febri hec=ticâ et infeliciter cum ito evenit, non possumus adhibere medicamenta stimulantia. Dolor cholicus Biliosus nihil est nisi inflammatio hepatis et obstr=uctio secretionum, et venaesectio profusa cum Sub Mur. Hydrargeri solum usui alicui esse possunt. Fere arbitratum est quod lobus sinister hepatis si fiat mor=bosus, difficillimus est ad restituendum. Quidem medici adhibent multa remedia vegetabilia sed prorsus inutilia sunt et nihil prosunt.

Finis

An

Inaugural Dissertation

on

Aneurism submitted to the

Examination of the Provost, Trustees

and Faculty of Physic

of the

University of Maryland

for the Degree

of

Doctor in Medicine

by

George Newcomb

of

Baltimore

Maryland

To

Dr Nathan R Smith

Professor of Surgery in the University of Maryland

Sir

In departing from you, under whose directions my studies have been continued with pleasure and satisfaction, accompanied with innumerable opportunities for improvement in the practice of my Profession. Permit me thus publicly to return you my sincere thanks for the favours which you have been pleased to confer upon me. As a person distinguished for your humanity & usefulness in the practice of your profession. this dissertation is respectfully inscribed

As a small tribute of gratitude

by your friend & pupil

The Author.

He that adopts the sentiments of another whom he has reason to believe wiser than himself; is only to be blamed when he claims the honours which are only due to the Author, and endeavours to deceive the world into praise and veneration; for to learn is the proper business of youth; and whether we increase our knowledge by books or Conversation, we are equally indebted to foreign assistance.

(Rambler.)

An Inaugural Dissertation On Aneurism.

As it is the custom or law of the institution in which I have imbibed the principals of Medical Science to write and defend a dissertation on some medical subject, nothing but the necessity of so doing would have induced me to become an essaist; therefore I should consider that an apology for this, my first production, would be altogether superfluous.

In the long catalogue of diseases, which invade the human system, none in a surgical point of view, presented itself to my consideration, or appeared more highly worthy of my serious attention than the disease, which has received the appellation of Aneurism.

Transparent Gelatine

On

Photography.

Only it is the author's fate of the circumstances in which I have undertaken the preparation of Photographic Albumen and defined a Gelatine on these Photographic plates, nothing but the necessity of the strong wants have induced me to become an epistolist. Therefore I think consider that an apology for this, my first Photographic effort, would be altogether superfluous.

In the long catalogue of discoveries which constitute the human depicture have an a strongest proof of mere speculative study to any consideration, or appearance more highly worthy of my observation attention than the discovery which has received the appellation of Photography.

Aneurism is a disease of the arteries arising from a variety of causes; and in order to understand this disease it will be necessary for me to describe their structure and conformation, for without an accurate knowledge of the organs or tissues affected, we are generally unable to understand their diseases. The arteries are those sanguiducts which are prolonged from the ventricles of the heart; they receive their blood by the vis-a-tergo of this organ, and convey it to the extremities of the system. The form and arangement of the arterial system, resembles a minutely ramified tree; the trunk of which, (the great aorta) is implanted deep into the substance of the heart, which appears to be the root.

The arteries are composed of three coats, 1st a common or External. 2nd a muscular and 3rd an Internal coat The common or external coat, has sometimes been called

Tendinous; it is composed of cellular membrane, possessing the properties of Elasticity and Tenacity; it is of a white colour and very smooth on its internal surface, & rough on its external, where it is in contact with a cellular sheath or an additional investment. The power of resisting overdistention appears to be seated particularly in this coat, for when a ligature is drawn tightly aroun an artery, this coat withstands the operation, while the internal coats are cut and give away.

The middle coat is uncommonly thick, and appears to consist of muscular fibres, arranged in a circular direction. The immortal Bichat & others, have contended, that the arteries are entirely passive & at the same time denying the existence of a muscular coat, but I am of the opinion, that the arteries, have a peculiar and distinct action of themselves, independent of the heart, owing to their being in possession of a muscular coat. The heart

Pericardium; it is composed of fibrous membrane, and from the perforation of Pericardium and Diaphragm, it is of a small calibre and very flexible in its natural direction, but in its diseased, when it is so bound with a cutaneous substance or an additional investment. The power of pericardial membranes appears to be distinct from that of the heart for when a ligature is drawn by fully around the heart without interfering the circulation which the pericardial coat cut and pass away.

The middle coat is uncommonly thick, and appears to consist of muscular fibres, arranged in a circular direction. The innermost (Pericardial) fibres have contended, that the valves are entirely lined at the same time during the existence of a muscular coat but I am of the opinion that the valves have a peculiar and distinct action of themselves, independent of the heart, as they keep in perfect tone of a muscular coat. The heart

certainly gives the first impulse to the circulation, which causes the arteries to which it is sent, to dilate. then it immediately contracts upon its contents, which propels it still farther, & by the alternate systole & diastole of the arteries it is conveyed to their minute ramifications.

The Third or Inner coat, is very delicate & transparent. it is of a white colour. covered on its internal surface with an unctuous fluid, ~~& on~~ its external is connected to the muscular coat. tho' not by cellular tissue: This coat possesses great strength longitudinally, but tears readily, when the force is applied in the circular direction. I have seen the Internal coat of the Carotid artery lacerated in nearly an hundred places, when it was torn in the circular direction as was the case, in the experiments performed upon the horse by Professor Smith. The coats of the arteries are supplied with a vasa vasorum, which are small vessels which enter the coats of the artery to nourish and support their living properties.

Evidently from the great importance of the circulation which causes the activities of a body, it should have an immediately evident upon its contents which proceeds it that position of by the activities depends & dependent of the activities of it conveyed to their proper destinations.

The Tissues or Tissue cord is very delicate & transparent & is of a white colour, consists of the minute bodies, not in reality, & in its colour & consists of the minutes cord the by cellular tissue: This cord produces great strength & flexibility but less rapidly, when the force is applied in the transverse direction. Here lies the distinguishing cord of the muscular fibre, nearly are minutes fibres, when of tissue form in the muscular direction or more the cord in the appearance perpendicular upon the bone by Angular fibre. The cords of the muscles are supplied with a vast number, which are closely joined which unite the cord the body is moved and supplied their living properties.

The arteries are subject to a variety of diseases, such as Inflam=ation, subversion of their texture, and uniform enlargement or dilitation of their coats: they are also subject to change of form without lesion of tissue: thus their tissue may enlarge in part or throughout their whole extent, as parts that have been a long time inflamed, in this case the thickness of their parities corresponds to their dilitation, as in the development of the collateral branches when the disease is local.

With regard to the antiquity of the disease it appears to have been known for a long time.

Authors have generally described three species of aneurism.—

First— The true aneurism. aneurisma verum.

Second— The false aneurism. aneurisma spurium. &

Third— The varicose aneurism. aneurisma varicosum.

True aneurism. In true aneurism the artery is enlarged or dilat=ed in a small part of its tract. or more frequently without any

The patients are subjected to a variety of chemicals, such as sulphuric acid, hydrochloric, nitric, hydrocyanic, and many other substances, particularly solutions of these bases, and are also subjected to strong galvanic currents of lighter. They have very seldom been known to have had their minds affected, so much that have been in any degree affected, in this case the discovery of these particles appears to have contributed, as was the development of the wonderful powers which the patients seemed to have.

Little regard to the analogy of the diseases at appears to have been known for a long period.

(Illegible) have previously discovered these phases of mesmerism.

First – The two mesmerisms, electrical mesmerism.

Second – The false mesmerism, mesmerism phenomena.

Third – The genuine mesmerism, electrical mesmerism.

Fourth (Mesmerism). In two mesmerism the patient is completely deadened in a deep fast of sleep. It may be completely without any

previous dilatation, the internal coat is weakned by the constant impulse of the blood, or frequently altered in its texture, whereby it becomes broken, the cellular coat becomes distended on the sides of the artery & thereby forms a tumour: when the tumour presents a regular appearance and a determinate border, it is called circumscribed true aneurism: but when the tract of the artery is dilated for a considerable distance, presenting an oblong figure, & loosing itself gradually in the surrounding parts, that its margin cannot with exactness be ascertained it is then termed Diffused true aneurism. True aneurism is said to be one of the most dangerous diseases of the animal economy. The symptoms of the circumscribed & diffused are so nearly allied to each other, that we shall not describe them seperately, and therefore what we say of one, will be applicable to the other. The first thing which attracts the attention of the Patient is a preternatural throbbing in some

particular part or situation, he generally is liable to pass it over, as if nothing was the matter, untile his attention is again directed to the part by the throbbing, which leads him to make an examination & upon so doing, he discovers a small pulsating tumour, he immediately applies compression, untile the tumour is entirely dissipated, being altogether unacquainted with the nature of the disease, he fancies that nothing of any consequence is the matter, which induces him, to remove the pressure, but to his sorrow for no sooner has he removed the pressure, than the tumour returns at first it is generally unattended with pain, or change of colour in the skin, but in some instances the pain is very severe & almost insupportable, that the patient requests something to be done either for the better or worse, the tumour grows larger untile it has attained a great magnitude; in proportion as the tumour augments, the pulsation becomes more indistinct and some tele us that when it is very large, that the pulsation is lost

altogether. This has been ascribed by some to the loss of the dilatability & elasticity of the coats, whereby they become indurated: by others, to the deposition of coagulum on the inner surface of the sack, which interrupts some of the blood in its course, tho' in true aneurism the blood does not coagulate as soon, nor as often as in the spurious. I am inclined to both opinions: The communication below is lessened in proportion to the growth of the tumour, & hence it must affect the circulation below the tumour the pulse from this cause is weak and small, sometimes almost imperceptible. & the limb cold and oedematous. In our post-mortem examinations we find the extremity of the artery preternaturally small and contracted. The tumour gradually augments in size, untile it becomes in danger of bursting this is the most dangerous period of the disease, for from this occurrence the patient generally bleeds to death, in a few seconds, but this fatal event may be forseen, as the

part about to give away. becomes very tense, elevated, thin and of a dark purple colour. hence we see the necessity of surgical aid before this sad period arrives.

False aneurism. This species of aneurism is sometimes the cause of violent exertions, whereby the coat of the artery becomes lacer=ated, but the most common occasional cause, is a wound from some sabre instrument which penetrates the artery. and from the aperture the blood gushes out & insinuates itself into the surro=unding cellular tissue. This is sometimes the case in attempting to bleed at the bend of the arm, when the artery is very superf=icial. when this is the case the blood is thrown out with unus=ual force by jets corresponding to its pulsation: if we resort to compression, the blood is insinuated into the surrounding cellular tissue. in consequence of the blood not finding vent through the external wound, which being closed. this is called Diffused False aneurism. The tumefaction is uneven. irregu=

often knotty and extends upwards and downwards along the tract of the artery. the skin changes in colour, presenting an unusual dark purple colour. its size continues as long as the internal hemorrhage continues. and if Art does not interfere, sphacelation of the part will be the inevitable consequence.

Varicose aneurism. This species of aneurism was first described by Dr William Hunter. this generally happens where an artery is opened in puncturing a vein, whereby a direct communication is opened between the artery and vein which becomes varicose. This species of aneurism may take place, only where an artery is transfixed by a vein as is the case at the bend of the arm where the Brachial artery is transfixed by a vein. hence we see the disagreeable consequences which may ensue from Phlebotomy, when the young Surgeon has but an imperfect knowledge of the anatomy

of the parts. and perfect controle over the point of his 11
lancet, by little attention to venesection we may prevent
such disagreeable consequences.

There are different processes by which aneurism is cured
altho' the experience and observation of many have let them
to conclude otherwise, for observing the common course of
aneurism, when left to themselves: they increase in size
& involve other tissues. and at length burst. which is the
consequence of an alarming hemorrhage. which is immediately
destructive to the patient, Yet we are informed by credible
& respectful authors, that things happen sometimes otherwise
and in consequence of certain changes taking place a sponta
=neous cure is the result: they tell us that this desireable
change is brought about by inflamation, the coagulated blood
in the sack (if there be any) acts as a powerful stimulus or
irritant to the coats of the artery & thereby induce inflamation.

or that the increase of the tumour may become so tense as to be productive of inflamation in the surrounding tissues which may be propagated to the artery & cause an effusion of coagulable lymph, which may so block up part of the caliber of the artery, as to prevent the free circulation of blood through the tumour. In the next place a spontaneous cure may be effected. by the entire coagulation of the blood in the sack, in which case the blood coagulates in the adjoi=ning portion of the artery, which becomes pervious for a certain extent. but it is admitted that when the sack is entirely filled with coagulum, & the adjoining artery remaining pervious. that a cure will be effected, & be as effectual as if the whole artery was filled with coagulum. There are instances on record where spontaneous cures were effe=cted by the compression of the tumour upon the artery itself. Nature is said sometimes to be the cause of the

spontaneous cure of aneurism, and it would be well to observe her power in this case: every part of the system is connec=ted together by nerves, whose office it is to convey intelligence from one organ to another. to apprise them of their wants &c. As soon as an organ or tissue is affected. these sentinels (the nerves) convey the intelligence with remarkable agility to the sensorium commune, which reflects the sensation to every part of the nervous apparatus. they are immediately roused into active exercise by their sympathetic action they come forth with their potent implements of war, exerting their combined influence, in order to overcome this for=midable enemy; but when nature is inefficient to overcome on account of the strength of her foe, then should art assist her in accomplishing her important designs.

Treatment of aneurism. In the treatment of this disease we should pay particular attention to the constitution for I believe a local disease cannot exist for a great length of time without involving the whole system & giving rise to constitutional disturbance for generally the disturbance of the system is in proportion to the extent & violence of the local affection. In this disease there is generally an inflamitory diathesis, hence the necessity of bloodletting. Purgatives, antimonials ~~&c~~, low and spare diet, Bloodletting is the most powerful means in our hand in reduc-ing the Phlogistic state of the system. Our bleeding should be small & frequent, the blood should be drawn from a small orifice. Purgatives. they should be of the mild kind & such as should correct the morbid condition of the digestive organs. & render their secretions healthy. Antimonials. nauseating doses of antimony may prove beneficial in several ways. they relieve that oppressive dryness of the skin which accompany local

disease, they diminish the action of the heart and arteries; they restore the secretions and remove costiveness: these together with low diet & perfect rest is sufficient to reduce the most powerful inflamitory diathesis. But sometimes there is an opposite diathesis. The patient very much reduced & debilitated when the above plan would prove highly injurious. then we should endeavour to support the powers of the system by the use of Tonics, Cordials, nourishing diet &c

Surgical Treatment. which consists of Compression & the Ligature

The principal upon which external Aneurism is cured, consists in preventing the entrance of blood into the aneurismal sack & when this is accomplished the communication is destroyd. the blood in the sack is gradualy absorbed & the sack contracts whereby the tumour diminishes

When the tumour is small & its contents made to recede by pressure. then it may be proper for us to attempt a cure

by Compression. in all cases where we are called in sufficiently early it may be proper for us to attempt it tho it must be acknowledged that the practice has been unattended with success. Our compresses should be applied in such a manner, as to act upon a given point of the artery before the vessel reaches the aneurismal sack. this plan has been frequently attempted, & many ingenious compressing instruments devised, yet to no effect. these instruments have done honour to the inventors, yet very little for the advancement of science, or the alleviation of the sufferings of our fellow creatures. there is considerable objection to their employment, first. there generally accompanies every artery of importance, a large nerve, which in the application of compresses is very much compressed which gives the patient most excruciating pain. that he desires them to be removed. Second. In order to compress

by Geometry, in all cases where we are satisfied in
sufficiently early it may be proper for me to allude
the it must be acknowledged that the Practice has been
inconsiderable until recently. The construction of
in which a pressure, so to act upon a given Point
acting before the regard been for the instrument
Plane has been frequently attempted, a pressure
comparing instrument therefore, yet it is a fact
instruments have been known to the ancients, they being
for the admeasurement of distance, or the application of the
sufficiency of mere Elementary. There is considerable
objection to this employment, that the generally accom
- panied among artists of inferiority, a large proportion
in the application of Geometry is very much complicated
which gives the Practical result resulting from the
different Plane it is measured. Instead of trying to Geometry

an artery successfully. it is indispensibly necessary - 17
that there should be a firm base or surface beneath
& where this is not, it will be altogether useless, & a waste
of time, to continue their employment, for part of the blood
circulates through the artery in consequence of the sides of the
artery not being in contact, & while this is the case, we cann
- ot expect to excite adhesive inflammation between the sides
of its inner coat. Genga & Scarpa recommend the whole
limb to be bandaged including the tumour as equally as
possible, there object seems to be, to check the impetus
of the blood by degrees in the limb & promote the coagulum
in the sack. this mode might prove advantageous if the
bandages could be continued for a sufficient length of
time, but the practice would I believe be attended
with great many disadvantageous & be productive
of serious consequences, such as sphacelation of the part.

Ligature. Before we resort to an operation we should
use every exertion in our power to establish a cure by the means above recommended; but when the tumour becomes very large & threatens to burst, then we should resort to an operation as the only means possible of effecting a cure & lengthening the days of the unfortunate victim, with respect to the old mode of performing the operation, it appears to be very defective. Considerable improvement has been made by Mr John Hunter & other modern surgeons.

The old method was, after the application of the tourniquet, they made a bold, free, & extensive incision into the tumour, to remove the extravasated blood, & then tying the artery both above & below the wound, as near as might be done with safety; but to this plan there appears to be many objections, for experience & observation, as well as the weight of authority has convinced us, that it is allogether

unnecessary to apply a ligature both above & below the tumour
: for it renders the operation more complicated, tedious & difficult
causing the patient to experience unnecessary pain; for it is
now a well substantiated point in surgery, that a ligature above
the sack is entirely efficient, for it is well ascertained that
by preventing the flow of blood through the tumour, that it
will cease to enlarge, & diminish gradually by absorption, &
again, by making a free & extensive incision into the tumour
& thereby dividing it entirely, the consequences will inevitably
be a large unhealthy ulcer, which will produce constitu
-tional disturbance, whereby we have less chance of success.
Therefore from these considerations we should be forced
to adopt the present mode of operating, as the most simple
& safe. Before proceeding to perform the operation we
should have every thing in readiness, & by this, we prevent
a great deal of uneasiness & delay during the operation, for

according to the old adage) delays are generally dangerous when every thing is in readiness. the patient should be placed upon a table of sufficient height as to be commodious to the operator, who as the operation is generally tedious should be seated: the patient should be effectually secured by assistants. The first step in the operation should be to command the circulation by the tourniquet if it be necessary. then we should make an incision about two inches and a half in length through the skin & cellular substance. precisely over the tract of the artery, we will generally be able to feel the artery distinctly pulsa-
= ting beneath our fingers. we should then carefully open the sheath. & pass cautiously a ligature around the artery and draw it of sufficient tightness as at once to stop the circulation. through the artery we should care-
= fully avoid including a nerve or vein with the artery. We should

not detach the artery from its surrounding connections more than is actually necessary. nor expose them to action of the atmosphere longer than possible as it might be productive of inflammation of the vein &c. The sides of the wound should be drawn together by adhesive straps. the ends of the ligature should be left hanging out of the wound, which after a certain time may be drawn away with safety. but sometimes secondary hemmorrhage takes place, some two or three weeks after the operation, owing to the ulceration of the artery where the ligature was applied, so that proper precautions are necessarily required. tho I am convinced that this will not happen where the artery was in a healthy state previous to performing the operation.